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CONTAGIOUS ABORTION.*

An Agent in the Depletion of Dairy Herds.

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That the dairy herds of Victoria have suffered very serious depletion of recent years is a fact admitted by all, and it behoves us to look carefully into the matter in an endeavour to ascertain to what extent this has occurred. What are the causes? Are they preventable? And what does the future hold in store?

The figures of the Government Statist, upon which we must estimate our losses, are based on the returns at 1st March. We must, therefore, go back over the last two years and bear in mind that the early part of 1914 and the latter part of 1915 were good seasons, during which the unknown quantity of natural increase would affect the return.

TABLE SHOWING CATTLE IN VICTORIA FOR THREE YEARS

(Based on Return on 1st March following).

	Dairy Cattle.	Decrease.	Other Cattle.	Decrease.	Total.	Decrease.
1913	656,080	..	827,473	..	1,528,553	..
1914	610,517	45,563	752,025	120,448	1,362,542	166,011
1915	451,088	159,429	592,516	159,509	1,043,604	318,938
		204,992		279,957		484,949

* Paper read before the Farmers' Convention 1916

Whilst the industry as a whole is short this amount it must not be taken as total loss, for a large percentage would be of stock slaughtered —for example—in 1914 the decrease was 166,011, but 112 548 head of this can be accounted for by excess of slaughtering over previous year, 59,317, and increase of exports, 40,869, and a decrease of imports, 12,362, so that the unaccountable total for 1914 is only 53,463. In the same way it will probably be seen at a latter date that a large proportion of the 1915 decrease went to the slaughter yards. In whatever way, however, the loss was incurred, the industry is short to an alarming extent.

Let us then turn from the figures and ask, what are the causes of this depletion which we know has occurred, and are they preventable.

We have not to search very far for the primary cause of our present position for nearly every farmer will be able to give figures of his losses during the recent drought. If, however, we look a little deeper into this question, and will be honest enough to throw off the convenient cloak behind which it has been so easy to hide, the majority of farmers must answer the charge of bad management. Let us, therefore, drop the term "drought" and say the primary cause is, in plain terms, bad management. It is not my purpose to enter into a discussion as to the why and wherefore of this, further than to say that a number of farmers are unable to give their losses, because they did not have any, and this for the reason that, by virtue of good management, they provided a sufficient reserve of fodder to see them through the trying time. The financial wisdom of their foresight requires no comment, and the answer to the question : "Are losses preventable under this head?" is emphatically "Yes." How many, however, will profit by their experience? Are we not committing just as great a folly at the present time, and are we not all just like the child being chastised by its mother, crying, "I will be good—I won't do it again" and repeating the offence as soon as the prior soreness loses its sting?

Another factor which has been in operation during the past few months, and is bringing about, not only a reduction in the present numbers, but a very serious position for the future of the industry, is the indiscriminate slaughter of females both young and old. Again the charge of bad management must be answered by the farmer. Bad management shortened our supplies —the demand then became keen, and bad management is answering the demand. Does a man who wishes to build a house sell the foundation posts on his property with the knowledge that he will have to buy more at a later date before he can commence building? Will any one claim it is good management to put a little cash in their pocket to-day with the knowledge that they must pay a lot out in the near future for the same article? The man who is to-day resisting the lure offered for calves and saving them for the foundation of a herd (for the bad manager) will, in the near future, reap a handsome reward, for I cannot see how there is to be any material decrease in the price of cattle for some years—if ever.

Taking my illustration of house building a little further, what sort of structure will be erected by the farmer who obtains some of his timber at one place, and some at another, without reference to its quality its strength, and the duration of its seasoning, &c. His house will

quickly warp, twist, and split, and need constant repairs. The careful builder will know his timbers, and build a lasting edifice, and will oil paint, and varnish it. So with the dairy herd—the good manager will know his cows, will use a good bull, one that will improve his herd, not merely get calves, he will rear his females, and by painting the inside with nourishing food build up a business that gives him a handsome profit. By knowing his animals he can improve them, by avoiding indiscriminately purchasing, he will obviate the danger of introducing disease into his herd.

This brings us to another cause of depletion, and one which the bad manager is going to keep with us in good or bad seasons—I refer to contagious abortion. This disease has been known to exist for many years. As far back as 1567 attention was drawn to it in England, but it was not until 1876 that it was conclusively proved to be due to infection. It then took twenty years to find and prove which organism was responsible—this was done in 1896, by Bang. The losses that occur as the result of this disease are *enormous—not, unfortunately, from the* death of the infected animals, for if this occurred it could more easily be controlled; but by virtue of the fact that every affected animal lives and acts as a centre of distribution, and thus the disease becomes difficult to eradicate.

It has been estimated that in some parts of England 50 to 60 per cent. of cows are affected, while the evidence given before a committee appointed by the Board of Agriculture and Fisheries in 1909 to inquire into the disease, goes to show that approximately 25 per cent. of animals in England and Scotland were infected. Gilruth, some years ago, estimated the loss to the dairy farmer in New Zealand as between £200,000 and £300,000 per annum.

How, some may ask, do the losses arise since the cow does not die. The one who asks this question has evidently not experienced the trouble, and should use his utmost endeavours to keep his herd free. The losses may be classified under three headings, viz.:—

1. Loss of calf aborted. This is probably the smallest, yet, in view of our shortage of stock, a very serious one.

2. Diminished milk yield due to premature calving. This is a very considerable loss, for it is well known that a cow that slips her calf seldom if ever comes to her full milking capacity in that year.

3. A combination of the previous two repeated in subsequent years. This is the most serious loss, for the sterility that so often follows, and is shown by the cow persistently returning to the bull after she has aborted, means that if she does hold to the bull she comes in too late in the season to make her maximum profit or remains barren, then for several years the calf is not produced and the cow remains dry.

It is extremely difficult to give an accurate estimate as to what this all amounts to for reasons at once obvious, but let us take some figures in order to see the possibilities. So as not to be classed as too big an alarmist, by taking the English figures,—25 per cent. affected—let us suppose that 10 per cent. of the cows in Victoria were to become affected with the disease: on the latest statistics there are 451,088 cows in

Victoria: this would mean 45,000 cases of abortion; then we will have an account something like this—

Loss of calves 1st year	45,000	
Diminished milk yield from 45,000 cows, say, ⅓ of 300 gallons ...	4,500,000	gallons.
In the 2nd year ½ of these fail to get in calf, and the other ½ abort—		
Loss of calves	45,000	
Total loss of milk, 22,500 cows, say, 300 gallons each...	6,750,000	gallons.
Diminished yield from 22,500 cows, ½ of 300 gallons	2,250,000	,,

Convert this into money value, and a loss of between £300,000 and £400,000 per annum is evident. I have not so converted the figures, for who can say the value to the industry of a calf just born; to the farmer it is worth what he can get for it, but there is another value to be considered and that is the potential one, of motherhood to raise a subsequent generation. Whatever the figure taken the loss is sufficiently serious to justify our attention to the cause.

Abortion may be classified under two headings, viz.:—

1. Accidental, when owing to injury or disease of mother or fœtus, the fœtus may be expelled prematurely.

2. Contagious abortion, due to changes in the fœtus and its membranes induced by a specific organism, which brings about its expulsion without any material evidence of disease in the mother.

It is the latter form we are chiefly concerned with, but I would say to all, until you have satisfactory proof that an abortion is accidental, it would be wise to consider it as contagious. The reason for this will be more clearly seen at a later stage.

CAUSE.

The organism, which can be isolated, and has been shown to be responsible for this disease, is a very small bacillus which does not form spores, and which can be grown artificially without much trouble. Corrosive sublimate or perchloride of mercury has been shown to be perhaps the best agent to destroy it, but in internal secretions, and inside the womb, it may retain its virulence for many months.

Injections of pure cultures into the vagina of healthy pregnant cows will induce abortion in eight to ten weeks, or feeding with the same, will bring about the event in one to two months. In any case the change that is set up is an inflammation of the womb, and the membranes, which causes an extensive exudate to form between the uterus of the mother and the membranes surrounding the fœtus. This leads to a partial detachment of the fœtal membranes, with the consequences that abortion, or premature expulsion of the fœtus, may occur at any stage of gestation.

Natural infection may take place from the external genitals, a bull that has served a cow recently aborted will transmit the organism to the cows he next serves; further, bails, stalls, bedding, camping places, &c., which become contaminated by the discharges from the vagina will serve as convenient means of transmitting to other cows which occupy the

same position. By contamination of pastures in the same way, the organism may pass through the alimentary canal, and this method is probably the chief one in the spread in a herd of pregnant cows.

An abortion occurring on a farm is regarded by the farmer in far too light a manner- not until a number have occurred does he realize the gravity of the situation. I have previously said that until proved otherwise every abortion should be regarded as of the contagious variety. This applies more particularly to the first case which occurs in a herd. As a rule, the farmer is content to say it is just a case of "slipping." If it should happen to be the contagious form of the disease the evil effects spread considerably, and when a number are affected the farmer becomes worried. The time to worry is at the first sign of trouble, nor wait until the disease has gained a firm footing. Strict isolation of the first case to occur on a farm, until it is proved to be non-contagious, will be a splendid insurance against the remainder becoming affected, or, at any rate, it will assist considerably in keeping an outbreak within reasonable limits.

SYMPTOMS.

Cows are most likely to abort in the fifth or seventh month of pregnancy, though it may occur both earlier and later, there is a tendency for a cow that has once aborted to carry the calf for a longer period at subsequent gestations, if she becomes pregnant. Abortion is usually preceded by slight swelling of the genital passages, and an odourless discharge of reddish grey or yellowish colour occurs. At times it may be blood stained. If the cow is milking, the secretion becomes diminished, and the character of the milk changes to somewhat like colostrum or first milk. Within a few days the abortion takes place. If it is early in the period of gestation the membranes come away with the foetus if later in the period, the membranes may remain attached for some time.

Following the abortion there is a continuous vaginal discharge of dirty brown or reddish material with sometimes fetid odour. This gradually diminishes, and may cease completely, and there is nothing to show the animal is affected except an inability to get her in calf again. The earlier after abortion that pregnancy can be obtained, the more certain is a subsequent abortion, whilst the longer interval that occurs the more likely is normal birth to occur.

DIAGNOSIS.

The infectious character of the abortion is indicated by the premonitory signs which usually appear two or three days before aborting, and by the continuous discharge after; in this discharge the organism may be found on microscopical examination. Laboratory methods of diagnosis have been tried, but up to the present no finality has been reached.

COURSE.

The disease persists in a herd for years, after the first case there is a period of calm followed by abortions in rapid succession until normal births are exceptional. This continues until two or three abortions per animal have occurred, when an immunity is apparently established and only newly introduced cows are affected. The course of the disease in Victoria appears to vary somewhat to that in Great Britain, for here,

there seems to be a far greater difficulty in getting cows to hold to the bull, the cows remaining sterile for a long period, so that a second abortion is not often seen. If we could be sure of a pregnancy the loss from the disease would not be nearly so severe.

TREATMENT.

The farmer who has been unfortunate enough to have an outbreak on his farm must make up his mind to apply himself energetically for some years' work. No half-and-half measures will answer the purpose, and, indeed, some who have tackled the problem with which they are faced, in a thorough manner, will say that even full measures are disheartening.

Bearing in mind the manner in which the disease is spread, the principal methods of treatment are apparent. Isolation stands out as indispensable. Under this heading I must again emphasize the necessity of looking after the first case. As soon as any premonitory symptoms are apparent the animal should be completely isolated, and the premises about which she may have been discharging thoroughly disinfected. If abortion has actually taken place every effort should be made to keep the apparently healthy cows in isolation, and away from the affected area, with the object of breaking the cycle of infection. The organism is expelled from the cow per vagina, and enters others either through the mouth or the vagina. Any break in this chain is going to assist in eradication; therefore, remove your cows from the source of infection and endeavour to destroy the organisms. This latter is done by the use of antiseptics, of which perchloride of mercury has been found most satisfactory. Its one drawback is that it induces some degree of straining, but this, however, need cause no alarm. For convenience, the whole procedure has been tabulated as follows:—

CONTAGIOUS ABORTION IN CATTLE.

GENERAL INSTRUCTIONS FOR GUIDANCE OF OWNER IN CONTROL AND TREATMENT OF OUTBREAK.

Stock.

1. When cows abort or "slink," the prematurely born calf, together with after-birth and any discharges, must be immediately destroyed completely by burning on the spot where they are found: these cows to be kept in paddock where they aborted.

2. Cows which have not up to the present aborted should be removed at once to "clean" paddocks and kept from contact with those aborting. Any subsequent aborting or showing signs of being likely to do so, must be immediately returned to the original paddock. The calf and after-birth, &c., to be destroyed on the spot as before.

3. Bull to be removed from herd and isolated.

4. A second shed or enclosure should, if possible, be made available for separate milking and treatment of cows which have not up to the present aborted. Aborting cows to be kept out of the shed or enclosures.

5. Intelligent responsible persons should be detailed for milking and handling aborting and non-aborting cows, and their respective duties must not be interchanged.

TREATMENT.

To be carried out in the order as hereunder indicated:—

1. Wash thoroughly the rump, hip to hocks, escutcheon, tail, back passages (outside) of cows nearest calving, and which have not previously aborted, two or three times a week for a period of three weeks with a 6 per cent. solution of copper sulphate or 1 in 1,000 solution of corrosive sublimate. Follow this with injections into genital passage of lukewarm corrosive sublimate—1 in 3,000. Repeat whole process after an interval of three weeks.

2. Treat in same way—

(*a*) Cows now in milk, whether in calf or not, and which have not previously aborted, twice a week.

(*b*) Cows in which longest time has passed since they aborted.

(*c*) Cows which have recently aborted, once a day for one or two weeks, then two or three times a week for two weeks, or until discharge has stopped.

3. *The Bull.*—Clip long hair from sheath and belly. Wash skin surrounding with same solution as for cows. Subsequently flood interior of sheath with corrosive sublimate solution 1 in 3,000, closing the opening with hand and manipulating fluid well into furthermost parts of sheath.

(Note.—This should be done the day before bull is required for service, and repeated two or three times for a week after each service. The bull may be required to be thrown for the purpose.)

4. Newly-born calves born to full time should be sponged all over with the copper sulphate solution before being allowed to mix with herd

5. Cows which have aborted should not be served for at least four months after aborting.

PREMISES.

1. (*a*) Thoroughly sweep down whole interior of milking shed, collect refuse, and dispose of as indicated in paragraph (*c*).

(*b*) Scrub bails, mangers, and other woodwork with hot solution of washing soda (1 lb. to 4 gallons of water).

(*c*) Collect manure, urine, and other refuse in convenient receptacles at shed door, convey to place inaccessible to cows, and thoroughly sprinkle with 6 per cent. copper sulphate solution.

(*d*) Thoroughly spray ceilings, bails, posts, and floor with 6 per cent. copper sulphate solution.

2. Clean up all refuse immediately after each milking, and treat as in paragraph (*c*).

3. Repeat spraying of shed with the solution of copper sulphate at least once every week during treatment of cows, and subsequently limewash thoroughly with 1 lb. of crude carbolic acid to four gallons of freshly-made limewash.

Note.—Care should be exercised in using above solutions on account of their poisonous properties.

For irrigating or injecting into the calf passages special metal or india-rubber pumps can be procured at surgical instrument suppliers. *In using the perchloride of mercury solution ordinary metal syringes, or mixing dishes, should on no account be used.* A simple and convenient apparatus can be made by fixing a large enamel funnel in one end of a 2-ft. piece of india-rubber tubing and a small long wooden or vulcanite nozzle in the other.

Never dispose of a cow that you can get in calf; by keeping her you will more quickly bring the disease to a standstill than by disposing of her and bringing fresh material on to the farm. Keep newly purchased pregnant animals isolated until natural calving occurs.

METHODS OF PREVENTION.

Several methods have been from time to time promulgated, but nothing definite has been determined. Subcutaneous injection of 2 per cent. solution of carbolic acid 10 c.c. per week has been highly spoken of by some authorities, others have had no success.

Immunization experiments have been conducted but are not yet satisfactory for general application.

THE FUTURE.

Let us glance at the outlook for the future in relation to contagious abortion. There are two channels to direct our attention to

1. *Effort by the Farmer.*—This effort is one which all should make first by trying to keep clear of the disease by—

(*a*) breeding your own stock;
(*b*) isolating and observing all purchased animals;
(*c*) using your own clean bull.

Second, by trying to check the spread by—

(*a*) following the directions for control;
(*b*) never selling an aborted cow. This will only spread the disease to the unfortunate purchaser. Some day you may be the purchaser.

2. *Effort by the State.* If the farmer will not exert his efforts under No. 1, then the second channel of control must be taken in hand. This would entail quarantine restrictions, and the prohibition of the movement of cows, either that have aborted, or have been in a herd in which abortion has occurred. This would be such a drastic procedure and such a heavy loss to owners that I will leave you to consider which course it were wiser to adopt.

In conclusion let me urge upon you to keep your females, every female killed destroys a potential increase. Let every female of breeding age stand in the position of invested capital to you from which you will annually draw your interest in the shape of calves and milk.

The market of the world requires some concern to supply meat, Australia offers the finest opportunity for the foundation of such a concern, get a share in the shape of a female. Do not be led away by high prices now to dispose of your share, rather use your utmost endeavour to obtain more shares. The price of them will not go back.

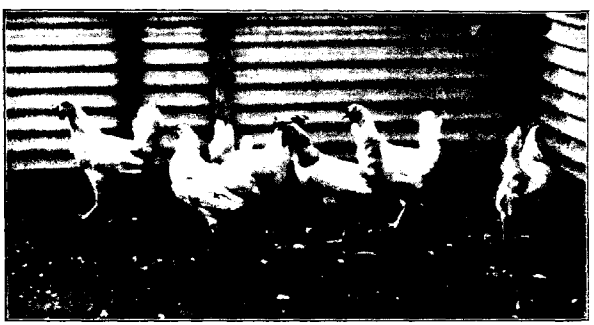
REPORT ON THE FIFTH VICTORIAN EGG-LAYING COMPETITION, 1915-16.

CONDUCTED AT THE BURNLEY SCHOOL OF HORTICULTURE BY THE DEPARTMENT OF AGRICULTURE, VICTORIA.

By A. Hart, Chief Poultry Expert.

RECORDS ESTABLISHED.

In presenting the annual report of the laying competition which has just been concluded at Burnley, I would instance the immense extent of the poultry industry in both England and America. During the year 1913 the value of the eggs imported into England from other countries amounted to £9,590,602, while poultry valued at £954,540 was imported during the same period, making up a total of £10,545,142 for one year.



W. H. Robbins, White Leghorns, 1st prize and gold medal, for dry mash section, 1,638 eggs, twelve months' test; also 1st prize for greatest market value of eggs for the year, £10 19s. 10½d.

Although these figures were materially reduced during 1915 through war conditions, there were still very large quantities of eggs and poultry imported into England. With such a vast demand in sight there should be every inducement for Victoria to endeavour to provide a portion of the eggs and poultry that are annually required.

In the United States of America the figures given in connexion with the poultry industry show what immense proportions it has attained. According to the *Chicago Live Stock World*, the egg return from the United States for one year amounted to 280,000,000 dollars (£56,000,000). The total value of the gold, silver, wool, and sheep for the same year amounted to 272,434,315 dollars £1,531,337 less than what was derived from the poultry industry alone. Poultry returned £4,000,000 more than the cotton crop, and £10,000,000 more than the wheat crop for the same year. Such enormous figures as the above show

what importance the poultry industry has reached in the States, and it should certainly be a strong incentive for the advancement and extension of the business in our State, where we possess advantages which in many ways are very much more favorable than those obtaining in America.

The Fifth Annual Laying Competition furnishes a large amount of interesting as well as educational features of much value to poultry-keepers generally. The importance of the tests at Burnley is admitted by all who are associated with the poultry industry, and the results of the tests of 1915-16, taken as a whole, have never been before equalled. Although no sensational record has been put up by any one pen, the total averages from the whole of the competing birds are well ahead of previous years. As the uniform egg production of the whole of the birds is much better than usual, it is of greatly more value than a high record from any one pen would be. The figures in connexion with this

G. McDonnell, White Leghorns, 1st prize and gold medal, wet mash section, 1,661 eggs, twelve months' test. Value £10 19s. 6½d.

test were very satisfactory. The birds were divided into three sections. The light breeds, dry mash test, had nineteen entries, and the heavy breeds, wet mash test, twenty entries, making a total of 570 birds in the three sections. This year no replacements of birds which became incapacitated from any cause whatever were allowed. In my opinion, this is the only rule to follow if reliable records are required. When extra birds are allowed to take the place of those that have been removed from the pen through injury, &c., the total number of eggs produced by that pen cannot be fairly claimed as being from six birds, and the figures produced under these conditions cannot be classed as a record. This rule has been found satisfactory in every respect, and, although some owners have lost the chance of winning by the death of competing birds, they agree that it is a misfortune for which there is no remedy. During the twelve months twenty birds dropped out from sixteen pens through various causes; this reduced the egg production

from these particular pens and also made a difference to the total laying from the whole of the birds for twelve months.

An idea may be given as to the great improvement made in Victoria in respect to egg producing White Leghorns during the past eleven years, the greater portion of which may be credited to the influence of laying competitions. At Dookie College, in 1904-5, six White Leghorns won the test with 1,313 eggs for twelve months. In the test just concluded at Burnley, the winning pen of six White Leghorns in the wet mash section produced 1,661 eggs, this being an increase of fifty-eight eggs from each bird, working out an extra return of 6s. per bird. This conclusively proves that the laying competitions must have benefited poultry-keepers to a great extent, and also largely increased the yearly value of the industry in the State. The five leading pens of White Leghorns produced a total of 8,160 eggs for the year. This means that thirty birds put up an average of 272 eggs each, bringing in a gross return of 35s. 10d. per bird, and a total of £52 16s. from the thirty.

G. E. Graham, Black Orpingtons, 1st prize and gold medal, heavy breeds, wet mash section, 1,507 eggs for twelve months' test. Value £9 18s. 6d.

This certainly constitutes a record in any test in the world for that number of birds. White Leghorns were very much in the majority, the whole of the birds in the light breeds tests being of that variety. Although it must be admitted that White Leghorns are at the top as prolific egg producers, it is a matter for regret that owners of some of the other light breeds do not make an effort to improve the laying qualities of their birds and enter into competition with White Leghorns. When it is considered what a marvellous improvement has been effected in the latter breed, it appears quite feasible that, if equal attention were given to other breeds, it would result successfully. With respect to the heavy breeds section, it is pleasing to find that several breeds are included. Black Orpingtons keep up their reputation by holding the two leading positions. The practically new breed of Rhode Island Reds have made a name for themselves as layers by filling the third position, and a pen of Flaverolles has done really well by taking ninth place. One pen of

Silver Wyandottes did fairly well. White Wyandottes and White Orpingtons competed, but were low down in the test. The bulk of the Black Orpingtons which competed were hardly up to our Orpington standard. This has, however, been remedied to a great extent in the present test in which the bulk of the birds are of fair type and nice size. In comparing the size of the eggs produced they show a general improvement. Although eggs should not be under 24 to 25 ozs. per dozen, the production of extremely large eggs should not be encouraged. The highest average weight of eggs was gained by six Black Orpingtons, their eggs averaging 27 ozs. per dozen. Birds from this strain should be useful to improve the size of eggs where they are on the small side.

The total number of eggs produced for the year from the 570 birds was 125,119. Of this number, the 336 birds in the light breeds, wet mash test, contributed 75,900, working out at an average of nearly 226 eggs per bird. The 114 birds in the light breeds, dry mash test, produced 25,164 eggs, being an average of 220½ from each bird. The 120

Good Laying Type of Head, one of six White Leghorns, with an average of 283 eggs in 12 months.

Bad Laying Type of Head, one of six White Leghorns, with an average of 144 eggs in 12 months.

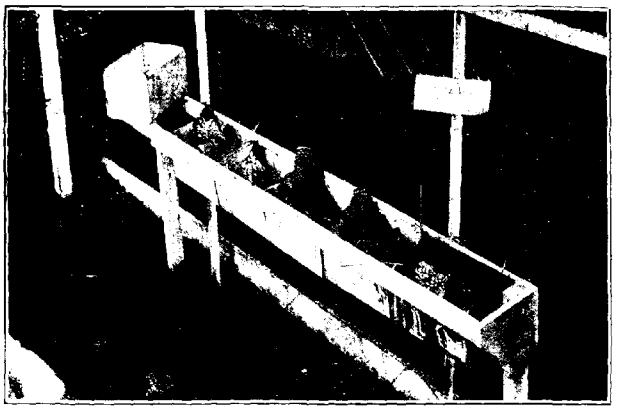
birds in the heavy breeds, wet mash test, produced 24,055 eggs, this being an average of 200½ eggs per bird. The average price received for the eggs was 1s. 7d. per dozen. This works out a total gross return of £825 8s. from the 570 birds, making an average of 28s. 10d. from each bird. This must be regarded as a very high average return from such a number of birds of various breeds, and proves that the stock are really good, and that the methods of feeding, &c., are on the very best lines. As the price of feed was very much higher than usual the cost per hen amounted to just under threepence per week.

In comparing the egg production from the birds fed on wet and dry mash respectively, there is not so much difference as there was last year. The result shows that birds fed on a properly constituted dry mash will give good results, and both systems may be recommended for egg production, the conditions and surroundings under which the birds are kept being the factors in influencing a choice. The two methods of feeding

were conducted separately in the light breeds The wet mash was composed of: Bran, 16 lbs.; ground oats, 4 lbs.; pollard, 20 lbs.; peameal, 4 lbs.; oatmeal pollard, 4 lbs.; minced liver, 8 lbs. The whole was mixed together with liver soup, given warm in a crumbly condition. About 2 ozs. were allowed to each bird in the morning. One ounce mixed with green lucerne, chaffed and silver beet was given at mid-day. For the evening meal, wheat, oats, and crushed maize were supplied, varied according to appetite and weather conditions. From 2 to 2½ ozs. were allowed to each bird. Onions were given occasionally as a tonic. The formula of dry mash, which was introduced by myself, has been very successful. It is made up as follows:—Bran, 20 lbs.; wheat pollard, 18 lbs.; oatmeal pollard, 33 lbs.; peameal,

How to increase egg production and the size of the egg.—Single test or trap nest your pullets for one year.

16 lbs.; ground oats (portion of hulls removed), 10 lbs. To this was added 2 lbs. of black or brown sugar. The whole was well mixed and placed in an automatic hopper, to which the birds had access during the day. Animal food, generally consisting of boiled liver, at the rate of 1 oz. to each bird, was given three or four times a week. Green lucerne, silver beet, or clover, was chaffed and fed at mid-day. The evening meal was composed of wheat and oats, and during cold or rough weather maize was added. Shell grit and charcoal were always on hand, and a constant supply of water was given by troughs running the full length of the pens.



Vermin-proof nest, simple and effective.

To get best results out of hopper feeding, chickens must be reared on dry mash.

The competition was in charge of Mr. J. T. Macaulay, who performed his many and varied duties efficiently, and it is to his capable management that a great deal of the success attained can be ascribed. He took

a keen interest in the various tests, keeping a complete record of the eggs produced daily from the different pens, as well as putting down many other important particulars in connexion with the tests. In this way he supplied a fund of useful information of much value to poultry-keepers generally.

Although the competitions at Burnley have been very successful so far as they have gone, there is one point in which an improvement might be made. It is the indicating of the highest egg producing birds in any one pen. When six birds are penned together, there is certain to be a difference in their egg production, and as under the present system the whole of the eggs from each pen are averaged, the best layer cannot be indicated. This, in my opinion, is a mistake which should be remedied. I would suggest that trap-nests or single pen testing be given a trial. To instal the latter right through the whole of the tests would, perhaps, be too costly, but it might be suggested that a few pens should be kept under these conditions. The trap-nest system would not be so expensive, and it would, I think, be advantageous in many respects to give this method a trial with portion of the competing birds in each test. It would then be easy to indicate the best individual layers and make a selection of the highest grade egg producers to improve the stock.

In conclusion, I would again bring under notice the very favorable conditions under which poultry-keeping can be carried on in this State, either as an adjunct to farming, dairying, or fruit-growing. At present we are producing very little more eggs and poultry than is required for Victoria's consumption. This is influenced to a great extent at the moment by existing war conditions, but under normal conditions there should be a very big surplus of both eggs and poultry in our State which would be available for outside markets. The demand in England is practically unlimited for these products. With suitable conditions in packing and shipping, Victoria should, in the near future, participate largely in the big yearly amounts which are distributed to other colonies by England for both eggs and poultry.

Owner.	Breeds.	Total number of eggs laid.	Average number per bird.	Average market value at 1s. 7d. per doz.
				£ s. d.
LIGHT BREEDS. WET MASH.				
1. G. McDonnell ..	White Leghorns ..	1,661	276$\frac{5}{6}$	10 19 6$\frac{1}{2}$
2. H. McKenzie and Son..	.. .. ..	1,637	272$\frac{5}{6}$	10 16 3$\frac{1}{2}$
3. W. M. Bayles ..	.. .. ..	1,623	270$\frac{1}{2}$	10 14 8$\frac{3}{4}$
LIGHT BREEDS. DRY MASH.				
1. W. H. Robbins ..	White Leghorns ..	1,638	273	10 19 10$\frac{1}{2}$
2. H. McKenzie and Son..	.. .. ..	1,601	266$\frac{5}{6}$	10 11 3
3. A. A. Sandland ..	.. .. ..	1,457	242$\frac{5}{6}$	9 12 3
HEAVY BREEDS. WET MASH.				
1. C. E. Graham ..	Black Orpingtons ..	1,507	251$\frac{1}{4}$	9 18 10
2. Marville Poultry Farm	.. .. ..	1,447	241$\frac{1}{6}$	9 10 11
3. E. W. Hippe ..	Rhode Island Reds	1,423	237$\frac{1}{2}$	9 7 9

Record of Eggs Laid 1915 16.

LIGHT BREEDS—WET MASH.

Pen No.	Owner.	Breed.	1915.								1916.				Total.	Average Weight per Dozen.	Position in Competition.
			April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.		(ozs.	
38	G. McDonnell	White Leghorns	38	128	132	138	145	147	166	159	154	154	137	123	40	1,661	24·5	1
34	H. McKenzie and Son	.. .. ..	43	137	100	113	144	153	175	157	155	148	127	128	43	1,637	23·3	2
42	W. M. Bayles	.. .. ..	61	106	132	112	133	154	166	162	148	139	138	130	52	1,623	23·9	3
23	Fulham Park	.. .. ..	24	95	97	105	128	146	170	155	156	140	135	130	55	1,542	23·3	4
59	W. G. Osborne	.. .. ..	52	89	87	106	148	151	150	159	162	144	130	134	52	1,534	23·2	5
3	J. J. West	.. .. ..	48	116	122	132	150	142	157	158	150	129	118	125	47	1,524	23·3	6
8	C. J. Jackson	.. .. ..	51	132	111	113	135	144	157	148	151	131	105	98	37	1,516	24·1	7
2	E. A. Lawson	.. .. ..	63	121	115	126	133	153	165	153	155	120	97	80	17	1,493	23·4	8
54	W. H. Clingin	.. .. ..	31	80	92	108	116	156	157	128	149	151	123	117	45	1,483	24·8	9
30	A. E. Silberelsen	.. .. ..	38	138	107	79	124	146	157	145	147	140	118	102	29	1,469	23·9	10
19	L. G. Broadbent	.. .. ..	70	145	121	97	134	158	149	147	142	127	120	51	9	1,467	24·5	11
3	J. H. Gill	.. .. ..	52	106	84	99	125	146	155	148	147	139	114	106	48	1,466	24·0	12
28	R. Lethbridge	.. .. ..	17	117	98	102	109	150	163	156	145	149	125	99	31	1,462	24·5	13
16	N. Barsten	.. .. ..	59	111	106	111	132	123	158	124	140	127	121	92	47	1,441	23·9	14
50	John Hood	.. .. ..	36	92	93	130	120	142	132	150	136	119	119	118	40	1,437	24·3	15
44	Mrs. F. M. Oliver	.. .. ..	34	127	98	117	133	140	137	121	131	108	116	120	45	1,429	24·6	16
32	W. M. Sewell	.. .. ..	51	111	73	91	115	153	151	136	129	118	118	95	33	1,414	24·1	17
6	F. Doddissen	.. .. ..	62	130	91	115	108	152	147	126	116	103	104	95	38	1,417	24·3	18
58	Thirkell and Smith	.. .. ..	55	60	54	102	123	130	156	149	160	148	125	114	41	1,411	24·0	19
18	D. Adkins	.. .. ..	50	115	104	106	129	125	120	123	151	133	104	104	37	1,407	24·5	20
27	J. A. Stubl	.. .. ..		49	91	113	136	147	156	147	153	145	123	103	44	1,407	25·0	21
9	J. Schwabb	.. .. ..	39	136	105	119	125	138	149	138	107	120	88	88	33	1,395	24·5	21
32	F. Hodges	.. .. ..	57	111	85	108	135	132	140	130	104	123	112	105	49	1,391	25·6	23
42	S. Bascomb	.. .. ..	50	79	49	52	127	153	152	140	149	144	129	126	42	1,392	24·0	23
7	Maryille Poultry Farm	.. .. ..	66	119	101	116	126	135	157	141	141	129	99	93	6	1,385	24·3	24
11	J. R. Brigden	.. .. ..	31	92	90	118	135	113	135	140	141	124	99	88	24	1,380	26·1	25
4	R. Hay	White Leghorns (five birds)	38	125	88	110	142	138	151	129	126	108	96	91	35	1,370	25·7	26
26	A. Mowatt	White Leghorns	53	101	106	119	141	141	149	124	114	106	93	96	31	1,368	23·6	27
13	F. Hastier	.. .. ..	23	99	74	122	126	148	157	146	141	96	98	99	27	1,358	23·4	28
20	R. W. Pope	.. .. ..	24	93	95	56	132	147	159	149	147	135	106	86	30	1,356	23·9	29
10	A. E. Taffl-by	White Leghorns (five birds)	41	107	122	130	110	131	128	115	114	108	93	88	33	1,354	23·6	30
43	H. L. Merrick	White Leghorns	20	93	101	81	94	130	154	152	143	143	103	89	35	1,350	24·0	31
15	H. N. M. Abrams	.. .. ..	38	92	95	96	115	137	141	138	125	129	123	94	28	1,340	25·6	32
21	E. B. Harris	White Leghorns (five birds)	39	114	136	146	145	139	146	104	123	102	74	32	..	1,318	24·6	33
1	Mrs. H. Stevenson	White Leghorns	13	116	78	105	136	113	146	127	131	117	89	66	17	1,314	24·4	34

RECORD OF EGGS LAID 1915-16 *continued.*

LIGHT BREEDS—WET MASH *continued.*

Pen No.	Owner.	Breed.	1915.									1916.				Total.	Average Weight per Dozen.	Position in Competition.
			April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.		ozs.	
24	Lyabeth Poultry Farm	White Leghorns ..	12	72	95	120	131	112	143	140	128	104	98	72	26	1,313	25·5	35
55	W. N. O'Mallane ..	.. .. ..	25	88	88	100	130	143	142	124	115	116	96	104	45	1,313	24·6	
46	R. Berry	.. .. ..	51	90	80	72	129	138	142	121	132	116	118	111	45	1,295	24·6	36
43	A. W. Hall ..	White Leghorns (four birds)	60	116	90	93	125	133	137	128	127	122	90	81	24	1,296	25·3	37
12	G. Havman ..	White Leghorns ..	30	79	61	79	131	143	146	135	119	131	105	100	30	1,284	25·0	38
60	H. C. Brock ..	.. .. ..	67	126	50	109	137	127	126	115	107	108	94	84	33	1,281	24·9	39
41	J. A. Donaldson ..	.. .. ..	57	60	74	110	120	137	142	130	140	125	92	93	33	1,273	24·9	40
36	Weldon Poultry Yards	.. .. ..	57	93	73	62	91	130	153	155	113	120	110	75	12	1,272	24·2	41
49	Bennett and Chapman	White Leghorns .. (five birds)	23	75	134	105	122	143	153	132	116	116	83	39	4	1,245	22·8	42
30	C. C. Dann ..	White Leghorns ..	15	82	87	73	78	133	144	116	129	131	90	91	38	1,234	25·3	43
48	C. J. Beatty ..	.. .. ..	47	90	65	106	132	131	132	122	126	116	53	84	18	1,224	24·2	44
52	A. A. Sandland ..	.. .. ..	62	109	89	55	93	118	125	114	115	115	109	87	19	1,217	25·0	45
37	A. Ross	.. .. ..	30	58	83	101	120	123	123	125	129	122	110	100	34	1,216	24·1	46
53	W. G. Swift ..	White Leghorns (five birds)	43	142	131	122	133	147	121	107	68	59	49	48	13	1,206	24·2	47
45	South Yan Yean Poultry Farm	White Leghorns ..	20	79	72	104	110	128	140	121	117	90	87	93	37	1,195	24·1	48
25	Giddy and Son ..	White Leghorns (five birds)	62	112	84	107	116	121	138	132	118	93	64	35	8	1,190	25·7	49
47	J. C. Armstrong ..	White Leghorns ..	19	30	46	90	129	138	144	139	123	121	42	51	7	1,169	24·7	50
57	B. Mitchell ..	.. .. ..	55	82	89	88	111	117	116	106	107	100	84	56	29	1,138	24·1	51
44	W. Flood	White Leghorns (five birds)	30	74	89	84	67	92	138	129	125	121	87	71	12	1,118	25·0	52
31	L. McLean ..	White Leghorns ..	36	18	13	16	119	130	128	134	138	119	105	49	3	1,008	24·5	53
56	C. Hurst	White Leghorns (five birds)	35	10	58	80	107	110	116	99	106	106	91	79	17	1,044	26·2	54
			2,436	5,505	4,886	5,716	7,063	7,749	8,139	7,522	7,391	6,854	5,788	5,032	1,729	75,000		

Record of Eggs Laid, 1915-16.

LIGHT BREEDS—DRY MASH.

Pen No.	Owner.	Breed.	1915.								1916.				Total.	Average Weight per Dozen.	Position in Competition.
			April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.		ozs.	
80	W. H. Robbins ..	White Leghorns ..	57	155	151	135	146	149	153	138	143	133	123	120	35	1,638	23·5	1
68	H. McKenzie and Son	.. .. ..	40	145	148	89	138	161	160	161	157	154	126	140	37	1,601	22·8	2
70	A. A. sandland ..	.. .. ..	42	94	56	113	127	146	159	151	141	142	129	148	34	1,457	25	3
63	A. H. Padman ..	.. .. ..	54	58	39	128	158	152	162	147	143	132	123	117	32	1,445	24·8	4
79	Lysbeth Poultry Farm	.. .. ..	54	130	94	58	139	148	155	158	142	133	117	102	18	1,428	24·8	5
61	Mrs. H. Stevenson ..	.. .. ..	19	33	60	122	152	161	162	136	138	126	107	111	49	1,374	24·4	6
67	C. C. Dunn ..	.. .. ..	41	109	59	66	126	137	150	145	154	140	115	106	29	1,366	25·8	7
65	Thirkell and Smith	.. .. ..	65	96	58	94	124	146	148	144	136	133	113	104	24	1,355	25·7	8
62	Benwerren Egg Farm	.. .. ..	61	104	48	62	149	153	169	155	154	138	110	69	10	1,343	24·4	9
66	E. A. Lawson ..	.. .. ..	68	131	67	56	130	149	145	116	140	114	109	78	9	1,312	25·7	10
69	E. MacBrown ..	.. .. ..	52	106	44	129	117	112	144	137	125	125	75	57	12	1,305	24·4	11
72	Mrs. E. Zimmermann	.. .. ..	69	120	73	81	122	134	134	127	121	124	103	70	21	1,299	24·2	12
71	Moritz Bros. ..	.. .. ..	15	93	97	86	93	139	155	143	149	138	99	65	10	1,280	25·1	13
78	H. Hanbury ..	.. .. ..	49	95	111	116	124	130	136	105	117	95	84	88	27	1,277	23·8	14
73	C. L. Lindrea ..	.. .. ..	22	12	9	93	147	156	157	131	118	140	129	110	44	1,270	26·4	15
77	South Yan Yean Poultry Farm	.. .. ..	7	59	26	74	155	146	147	127	138	130	114	102	42	1,242	25·2	16
64	W. M. Bayles ..	White Leghorns (two birds)	61	120	91	96	120	139	146	136	120	53	46	41	18	1,190	24·5	17
74	J. H. Gill	White Leghorns (five birds)	9	22	60	92	106	112	124	110	107	99	87	65	14	1,013	24·2	18
75	Fulham Park ..	White Leghorns ..	..	36	77	94	78	106	125	104	116	90	79	53	11	969	25·9	19
			785	1,677	1,351	1,781	2,491	2,679	2,829	2,556	2,559	2,389	1,986	1,710	475	25,164		

Record of Eggs Laid, 1915–16.

HEAVY BREEDS—WET MASH.

Pen No.	Owner.	Breed.	1915.								1916.				Total.	Average Weight per Dozen.	Position in Competition.
			April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.		ozs.	
86	C. E. Graham ..	Black Orpingtons	8	107	151	150	156	153	153	141	115	123	106	112	32	1,507	25·6	1
97	Marvill Poultry Farm	,, ,,	73	126	99	137	156	153	122	118	115	99	107	115	27	1,447	24·2	2
89	E. W. Hippe ..	Rhode Island Reds	19	116	104	114	130	133	151	118	132	120	105	129	43	1,423	24·7	3
85	H. H. Pump ..	Black Orpingtons	39	105	118	120	114	135	133	119	107	114	116	112	34	1,304	25·3	4
92	J. Ogden	,, ,,	10	29	76	122	153	145	158	156	148	134	119	96	32	1,377	23·9	5
81	Mrs. T. W. Pearce ..	,, ,,	70	146	130	109	130	129	99	107	96	111	106	93	37	1,363	24·5	6
93	L. W. Parker ..	Black Orpingtons (five birds)	6	50	110	146	157	153	143	112	117	93	98	84	27	1,296	27·6	7
88	J. McAllan ..	Black Orpingtons	44	107	107	103	142	151	123	96	115	83	91	72	48	1,262	27·5	8
98	K. Courtenay ..	Faverolles	5	8	76	87	133	142	133	138	131	114	127	112	45	1,246	24·1	9
100	J. H. Wright ..	Black Orpingtons (five birds)	54	117	140	125	135	126	98	105	92	88	55	38	24	1,227	24·1	10
87	W. C. Spencer ..	Black Orpingtons	35	91	89	132	111	133	121	101	93	92	79	105	11	1,205	24·1	11
84	Cowan Bros. ..	,, ,,	9	70	112	117	108	140	133	114	98	117	99	79	11	1,202	23·8	12
90	Oaklands, P. F. ..	Black Orpingtons (five birds)	43	123	124	107	125	116	103	103	77	83	76	82	27	1,189	26·3	13
99	L. McLean ..	Black Orpingtons	37	102	83	125	118	115	130	109	115	87	79	58	14	1,172	25·8	14
91	A. Greenhalgh ..	,, ,,	48	88	98	89	115	130	139	121	110	95	79	43	2	1,167	25·6	15
95	W. H. Forsyth ..	Silver Wyandottes	35	90	84	79	132	102	128	101	71	87	96	79	25	1,109	25·3	16
83	G. Mayberry ..	Black Orpingtons	27	76	18	81	105	120	110	108	90	93	74	46	6	984	24·9	17
94	D. Fisher	Black Orpingtons (five birds)	58	117	113	113	113	114	84	61	61	62	15	33	..	978	24·6	18
82	J. B. Brigden ..	White Wyandottes (five birds)	..	..	2	14	130	112	125	100	80	73	68	55	31	820	24·4	19
96	Stranks Bros. ..	White Orpingtons	46	123	67	69	91	78	50	33	20	27	10	33	13	687	24·5	20
			664	1,824	1,931	2,169	2,591	2,560	2,415	2,171	1,999	1,805	1,741	1,576	480	24,055		

A. HART,
Chief Poultry Expert.

PAST RECORDS.

HELD UNDER GOVERNMENT SUPERVISION.

For Six Pullets in Twelve Months.

SOUTH AUSTRALIA.—Highest record (White Leghorns), 1,589, R. Walsh, Victoria.

WESTERN AUSTRALIA.—Highest record, 1,564, A. H. Padman, South Australia.

NEW SOUTH WALES.—Highest record, 1,541, S. Champion, New South Wales.

QUEENSLAND.—Highest record, 1,564, Moritz Brothers, South Australia.

VICTORIA.—Highest record, 1,699, W. N. O'Mullane, Victoria.

VICTORIA.—Highest record previously, 1,667, J. H. Gill, Victoria.

NEW ZEALAND.—Highest record, 1,632, W. A. Nixon, New Zealand.

VICTORIA.—Highest record (Black Orpingtons), 1,562, J. McAllan, Victoria.

VICTORIA.—Heavy breeds—World's record for Winter test, J. H. Wright, 524.

LECTURES, FARMERS' CLASSES, AND STALLION PARADES.

The following letter has been addressed to the secretaries of all Agricultural Societies throughout the State by the Director of Agriculture, Dr. S. S. Cameron:—

I have the honor, by direction, to inform you that, on account of the financial stress, it has been determined to suspend the Government grant to agricultural societies.

The Department's arrangements for the holding of stallion parades, lectures, and farmers' classes, which have hitherto been associated with the subsidy, will be continued.

STALLION PARADES.

A somewhat curtailed time-table for stallion parades is being arranged, and will be forwarded to you shortly, so that the necessary local arrangements may be made as usual. It is desired, also, that the system confirming the award of prizes to certified stallions only shall be continued, in order that societies may obtain the benefit of the subsidy when it is resumed.

LECTURES.

Enclosed is a list of lectures and demonstrations for 1916.

On account of the shortage in the staff through enlistment, the usual number of lectures on veterinary subjects and agriculture cannot be given, but the whole

programme on other subjects can be arranged, and the Department will be glad to comply with the requests of societies in this direction.

It is suggested, in order to save the time of officers, and travelling expenses, that societies requiring the usual four lectures should arrange that at least two should be held at centres in the same district on two following dates, or as near one another as practicable.

FARMERS' CLASSES.

It has been decided to shorten the period for farmers' classes from a fortnight to a week, in order to lessen the inconvenience to farmers, farmers' sons, and others, and thereby promote larger attendances. It will also be possible, under this arrangement, to meet the applications of a larger number of districts.

The object of the Agricultural Department in offering lectures or classes free of charge to farmers and land-owners is to enable them to obtain information on up-to-date farming methods, and the results of the research and experimental work on the research farms in Victoria.

The Agricultural Department recognises the fact that Agricultural Societies and Progress Associations can assist largely in organizing meetings for these purposes, and for the benefit of the agricultural community generally.

A competent staff of lecturers is available from both the practical and scientific aspects of the subjects to be dealt with. A list of subjects and the staff employed for lecturing is submitted herewith.

The benefits to be derived are—

Agriculture.

A knowledge of our different crop requirements, and how to supply them for the greatest profit.
The best systems of cultivation.
The right kinds of manures and quantities to use for various crops and soils.
The saving of money in the purchase of manures.
Systems of farm management.
Main points in successful wheat culture.

Live Stock.

How to treat injuries and ailments in horses and cattle.
Systems to adopt in breeding.
General care of animals.

Dairying.

How to breed and manage dairy cows.
The building of sheds, silos, &c.
Methods of testing cream and milk.
Foods to feed for maximum results.
The management of pigs, breeding and feeding.
Cheese-making.

Apiculture.

How to handle and manage bees.
Treatment of their diseases and methods of control.

Poultry.

The best methods of breeding, selecting, rearing and managing fowls for table use or egg production.
How to feed for highest profits.
The treatment of common ailments.

Orchard and Viticulture.

The main points in making these industries successful.

STALLION PARADES.

The awards of prizes in all classes for stallions three years old and over at the Society's Show, to be subject to the possession by the exhibit of a Government certificate of soundness.

Stallion Inspection Parades will be held at different centres throughout the State prior to the commencement of the Show season (Time-table for Stallion Parades for 1916 will be available shortly after 1st May, 1916). The parade centres are so arranged that all owners of Show stallions have the opportunity of submitting them for examination for the Government certificate of soundness before the closing of entries for the Show. Show secretaries will require to obtain evidence of the possession of the Government certificate in respect of exhibits at the time of entry, and should not accept entries of other than certificated horses.

Immediately after the Show, secretaries of societies are required to forward the names *of all the horses* that have won the prizes in stallion classes, together with the names of the owners, to the Director of Agriculture.

FARMERS' CLASSES.

Applications should be submitted as early as possible. Thirty students at least must be enrolled before a class can be held.

The rent of hall and all local charges are to be paid by the Society; all other expenses by the Department. Arrangements must be made to insure the uninterrupted use of the hall during the time the lectures are going on.

A roll of attendances at lectures and demonstrations shall be kept.

The Agricultural Classes will extend over one week, consisting of not more than five evening lectures. Field demonstrations will be arranged for day-time instruction on days as required. The majority of the lectures will be illustrated by limelight views.

Examinations will be held at the conclusion of each class, provided not less than five students compete. The successful competitor at each class will be eligible to take part in a final examination for the A.N.A. gold medal in Melbourne.

Free rail tickets will be issued to students to attend this final examination. Five competitors or more must attend or no medal will be awarded.

Professional men, students in attendance at Agricultural High Schools and Colleges, or at the Continuation Schools, and teachers from such institutions or State schools, are not allowed to sit for the examination.

LECTURES.

Applications should be submitted as early as possible, and accompanying the application must be a list of the subjects (see pages 343-44)

which the Society chooses. The dates of lectures or classes will then be fixed by the Department, and if Societies will state the most suitable seasons for their districts the classes or lectures will, as far as possible, be arranged accordingly.

The president or secretary, or a member of the council or committee of the Society, must take the chair at each lecture or class, and must certify as to the number and *bona fides* of the attendance as above required.

The rent of the hall, advertising, and all other local charges are to be paid by the Society; all other expenses by the Department.

SYNOPSIS OF LECTURES AND DEMONSTRATIONS.

PRINCIPLES OF AGRICULTURE.

1. The plant food of the soil.
2. Cultivation methods and management.
3. Principles of manuring.
4. Valuation of artificial manures.
5. The management of the farm.
6. Special crops and catch crops.
7. Irrigation principles and methods.
8. Factors in successful wheat cultivation.
9. Results of experimental work.

VETERINARY SCIENCE AND LIVE STOCK SUBJECTS.

1. The structure and care of the horse's foot (lantern).
2. Brood mares and breeding mishaps (lantern).
3. Colic, constipation and other bowel complaints.
4. Ailments of dairy cows—milk fever, impaction, udder complaints.
5. Contagious diseases of stock abortion, blackleg, tuberculosis, anthrax, pleuro-pneumonia, &c. (lantern).
6. Ailments of swine, or ailments of sheep.
7. Unsoundness in horses (lantern).
8. Principles of stock breeding—stud horses (lantern).
9. Teeth of the horse—age, defects (lantern).
10. Injuries to farm animals—first aid.
11. Principles of shoeing (lantern).

DAIRY FARMING.

1. Breeding and management.
2. Dairy buildings—silos and silage.
3. Dairy management.
4. Milk and cream testing.
5. Foods and feeding.
6. Pig breeding, feeding, and management.
7. Cheese making.

APICULTURE.

1. The honey industry—handling bees.
2. Breeding and management.
3. Diseases of bees—methods of control.

POULTRY BREEDING AND MANAGEMENT.

1. Incubation—natural and artificial—the rearing of chickens.
2. Breeds: payable or otherwise, table and export, eggs—how to select stock.
3. Turkeys: their care and management. Duck-raising and care.
4. Foods and feeding, with practical demonstration—mixing the mash.
5. Common ailments of poultry.

ORCHARD AND GARDEN WORK.

1. Fruit-growing—varieties suitable to the different localities, soils and sites.
2. Preparation of land; planting and pruning.
3. Cultivation - manuring and management.
4. Insect pests and fungus diseases and their treatment.

THE FRUIT INDUSTRY.

1. Handling, packing, grading, and marketing of fruit for export and local trade.

VITICULTURE.

1. Establishment of vineyard.
2. *Phylloxera and resistant stock—preparation of land.*
3. Propagation and grafting—best varieties to grow.
4. Pruning and seasonable operations.
5. Wine-making and cellar management.
6. Drying raisins, sultanas, and currants; fresh grapes for export.
7. Vine diseases and treatment.

SUBJECTS AND STAFF.

Principles of Agriculture—Mr. A. E. V. Richardson, M.A., B.Sc.; Mr. Temple Smith.

Veterinary Science, Stock Management, Dairy Sanitation and Education—Messrs. W. A. N. Robertson, B.V.Sc.; R. Griffin, M.R.C.V.S.

Dairy Farming - Mr. R. T. Archer and Staff of Dairy Supervisors.

The Dairying Industry and Export Trade—Messrs. R. Crowe and P. J. Carroll.

Orchard and Garden Work—Messrs. P. J. Carmody, H. W. Davey, and E. E. Pescott.

Sheep Breeding and Management--

Viticulture—Mr. F. de Castella.

Flax Culture and Demonstrations at Shows—Mr. J. E. Robilliard.

Poultry Breeding and Management—Mr. A. V. Rintoul.

Poultry Dressing Demonstrations—Mr. A. Hart.

Potato Culture—Mr. J. T. Ramsay.

Tobacco Culture—Mr. Temple Smith.

Pig Breeding and Management—Mr. R. T. Archer

Fruit Industries—Mr. E. Meeking.

Insect Pests—Mr. C. French, jun.

Plant Diseases—Mr. W. Laidlaw, B.Sc., and Mr. C. C. Brittlebank.

Apiculture—Mr. F. R. Beuhne.

Cheese Industry—Mr. G. C. Sawers.

VITICULTURAL NURSERY, WAHGUNYAH.

Visit of Inspection.

(From the *Rutherglen Sun*, 14th April, 1916.)

On Wednesday afternoon about 70 persons interested in Viticulture and Citrus Fruit Growing accepted the invitation of Mr. G. H. Adcock, F.L.S., principal of the Viticultural College, and visited the nursery at Wahgunyah, for the purpose of viewing the work carried out at the nursery during the past year.

Mr. A. E. V. Richardson, M.A., B.Sc. (agricultural superintendent), Mr. F. de Castella (Government Viticulturist), Mr. P. J. Carmody (chief orchard supervisor), and Mr. H. Wilkinson (vineyard manager), were present.

Among the visitors was Hon. John Bowser, M.L.A., and a party from Wangaratta.

Mr. G. H. Adcock, F.L.S., in welcoming the visitors, pointed out that the officers of the Department were always pleased to see growers at the nursery. They wished the growers to become familiar with the work that was being carried out. Each year the staff endeavoured to improve on its previous year's work, and he trusted that in a few years the acreage of the vineyards, in the district, would be equal to what it was previous to phylloxera. He had pleasure in inviting all present to make an inspection of the nursery, and during their walk through the nursery, questions would be answered and explanations given.

The visitors were then escorted over the nursery by Mr. Adcock and the officers of the Department who were present, a stay being made at numerous points of interest, where brief addresses were delivered and operations which had led to the present results were explained. Rather less than a quarter of a million phylloxera-resistant vine cuttings were bench grafted. The strike was an excellent one, and the general appearance of the young vines (see photo.) which will shortly be lifted and distributed, left nothing to be desired.

Half a million ungrafted resistant cuttings had also struck in a most satisfactory manner, and the number of ungrafted resistant rootlings available for those who intend to reconstitute by the method known as field grafting will probably be in excess of requirements.

The oranges, of which 24,000 were being budded, excited much attention. Demonstrations of this interesting operation were given by the Horticultural Staff.

The recently installed pumping plant driven by a Ronaldson and Tippett's 12 h.p. oil engine, manufactured in Ballarat, was much admired. This plant, which has been working most satisfactorily during the summer months, is capable of irrigating the nursery when the whole of the available land will be under nursery stock.

On returning to the grafting shed, afternoon tea was partaken of.

Mr. F. de Castella, in the course of a short address, which he was requested to deliver, said that it was gratifying to compare the present condition of the Rutherglen wine industry with what it was on the previous Field Day, just a year ago. The difference was enormous. The recovery after last year's drought was most satisfactory, and bore out the reassuring forecast then made. The vines had very wisely been pruned

rather short in most vineyards; this had curtailed the yield somewhat, but the state of the vineyards generally was now excellent, especially in view of the ordeal of last year, and gave splendid promise for the future.

What are the best stocks to plant? This is a vitally important question, but one which is not always easy to answer. It is largely governed by considerations of adaptation and affinity; in other words, of soil and scion.

Experimental plots were no doubt of great value. We have some which have given most useful information. There was room for much more experimental work of the kind, but propagation work had absorbed the viticultural resources of the Department so completely that the establishment of further experimental plots had not been possible. Unless numerous, such plots were not absolutely reliable—an isolated success or failure might easily be misleading—evidence might sometimes be contradictory. The whole district was one vast experimental plot, the most striking feature of which was the very general success of the stocks we now propagate. Only in very rare cases were marked failures

Visitors assembling at "callousing" and "hardening off" houses for vines, State Nursery, Wahgunyah.

noted. Voluminous records have been collected during the past two seasons, the most useful deductions from which would shortly be made available. It was interesting to note that even in France, where vine-growing is an industry of such enormous importance, complaints have recently been made concerning the lack of experimental plots, especially for testing drought resistance. Algeria, Sicily and Spain furnished interesting information; much literature had recently been secured from these countries.

The Algerian summer is very like ours. In that country the Berlandieri and its hybrids continue to greatly increase in popularity: 420A in particular tends to become the basis of reconstitution. It is, unfortunately, difficult to bench graft, though one of the easiest and best to field graft or bud. 41B is also an excellent stock; vines grafted on it bear very heavy crops; it is a poor grower at first and wants kind treatment for the first couple of years. 333 is another good Berlandieri hybrid, which was at first unduly neglected. The well known 1202 is

very popular in Algeria; especially in vineyards where it is well treated it yields very heavily and is held to be one of the stocks which responds best to heavy manuring.

Are we to abandon any of the stocks we now propagate? He did not think so. We have already given up the Riparias and Rupestris Martin, and they were not to be regretted. Doubts had been raised as regards Cape Metallica, yet in many vineyards it was quite satisfactory and yielded excellent crops. There certainly are some scions which do badly on it. In Mildura it is highly thought of. A.R.G. 1, though disappointing in some parts of Sicily, is one of our best stocks here; it is also excellent for irrigated land, as it suffers less than most from faulty drainage.

No doubt the general success of so many stocks here was due to the wonderful suitability for the vine of most of our vineyard soils, and

Vine grafting shed, State Nursery, Wahgunyah.

particularly the friable nature of the subsoil once it has been properly broken up to a sufficient depth. Thorough cultivation could not be too strongly urged. Drought resistance depends perhaps almost as much on proper soil treatment as on the choice of stock.

Several other stocks of much promise were dealt with, such as 106.8, the Riparia x Cordifolia Rupestris hybrid, so highly thought of in France for stiff, silty soils: also 84.3, 554.5, 62.66, 125.1, &c. Some of these had special points to recommend them. It was curious, however, that they were not more spoken of in recent viricultural literature.

A recent article by Professor Ravaz was quoted, dealing with stocks for dry situation, in which the contradictory nature of the question was pointed out. He holds the pure Rupestris to be poor drought resisters; they often suffer more than Riparia even, probably on account of the greater leaf surface, which evaporates more moisture.

Professor Ravaz gives the following list of stocks suitable for dry situations:—

Rich, dry, shallow soils, with stiff subsoil.—Riparia 106.8, 420A, 41B.

Poor, dry, shallow soil.—3306, 3309, 41B, 420A.

Rich, dry, deep soil (friable subsoil).—Riparia, 106.8, 420A, 41B, 3306, and 3309.

Poor, dry, deep soil.—Rupestris du Lot, 3306, 3309, 420A, and 41B. If the soil is very wet in winter and very dry in summer, as sometimes happens, 1202 and A.R.G.1.

It may come as a surprise to some to see the old Riparia still mentioned. It is not suitable for Australian conditions. It will be also noted that 41B and 420A are recommended for all the above soils.

Professor Ravaz's advice concerning stocks to produce high gravity musts is also interesting—in his opinion it is stocks with Riparia like be-

Bench grafted rooted vines, 9 months old, State Nursery, Wahgunyah.

haviour which should be selected—one requires vines with slow and regular vegetation, the activity of which ceases early in the season. In a word, the vines should behave in as nearly as possible the same way as though they were growing on a dry hill-side. The stocks recommended are Riparia Gloire, 106.8, 420A; and 3306, 3309, and 101.14, if the soil be poor.

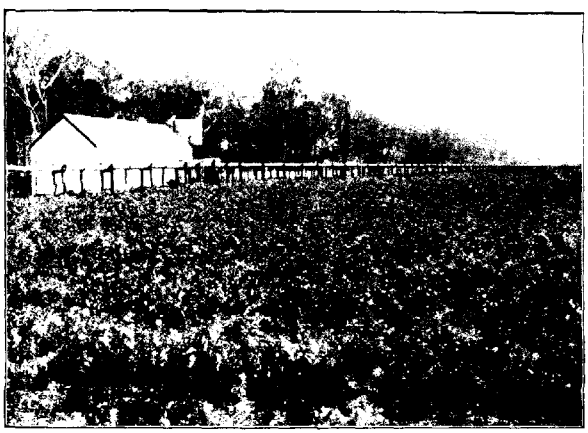
For sandy soils strong growers are not recommended. Their fruit would not set. Vialla (an old-fashioned stock in France) is recommended, as well as 106.8 and 420A. The Riparia and Rupestris hybrids (3306, 3309, and 101.14) grow rather too vigorously on sandy soils.

Malbeck grafted on du Lot has proved an unhappy union in most of our vineyards. The setting of the fruit is very unsatisfactory. Numerous experiments conducted last spring have had no appreciable results. A method worth trying is extra early pruning to weaken the

vine, and thus render it more fruitful. To be effectual, the pruning must be very early—as soon as vintage is over. If postponed until May, the vine is strengthened, rather than weakened.

Extra early pruning delays the start of growth the following spring. Vines which start to grow late are usually better bearers, because the vegetative action commences when the weather is warm. Pruning immediately would be worth trying on Malbecks grafted on du Lot.

The mysterious disease known in France as *Court noué*, literally short joint, was referred to. It seems to have some relationship with what we know here as "Rogue" vines, occasionally to be met with in most vineyards. Vines which show a characteristic abnormal vegetation and bear little or no fruit. In the heavily manured vineyards of Southern France, *Court noué* has sometimes done much damage. No parasite has yet been discovered as its cause, but it is claimed in some quarters that



New pumping plant and fluming, ungrafted resistant rootlings in foreground, State Nursery, Wahgunyah.

a marked improvement in the affected vines was obtained by pruning before the fall of the leaves and painting all cuts made with the secateur with coal tar. Growers were recommended to try this treatment on any "Rogue" vines in their vineyards.

Citrus Nursery.

One of the features of the work being carried out is the propagation of the orange and lemon tree.

Mr. Carmody stated that there was a great diversity of opinion throughout the world as to which of the stocks was the best for citrus trees. California favoured the sour orange stock as being the hardiest and as having an exceptionally good rooting system. Florida also favoured this stock. Of late years, the Tahiti orange stock was popular with some American growers, but it had a dwarfing effect.

In New South Wales, the sweet lemon was regarded as the best. From a nurseryman's point of view, this stock was the most profitable, as it was easily raised and a very free grower. Mr. Snider, who was in charge of the nursery, regarded this stock as excelling all others, not only from the nurseryman's point of view, but also from the growers'. He had had a long experience of this stock in Palestine, and knew of *groves of 50 years' standing to be highly profitable and to withstand* hardships and disease superior to any other stock in general use. Other growers were favorable to the Citrus trifoliata, a stock that had a dwarfing effect on the scion, but under unfavorable soil conditions was, perhaps, the hardiest of all.

During last year's drought the Mildura growers applied to their citrus groves the water from the Murray, which, late in the season, was exceptionally salty, and had a most disastrous effect upon the orange trees. The leaves fell off, and the trees were in a very perilous condition, and the first application of fresh water during the subsequent irrigation season accentuated the trouble to an alarming extent. The

General citrus stocks of 1915 seeding, State Nursery, Wahgunyah.

trees that came through the trying ordeal were those which had been worked on the sour orange stock. Mr. Davidson, the district orchard supervisor, informed him that, not only the oranges worked on the sour orange stock, but also the lemons on the same stock, unquestionably came off the best. The stock had an exceptionally good root system, but certainly the trees worked on it required, if not planted out in a very fertile soil, that they should be heavily fed with manures and the soil properly managed. The lemon stock grows rapidly, and was a good forager, so that in poor soils trees on this stock had the advantage and should be given preference to. In addition, they came into bearing early, so that settlers were assured of comparatively quick returns.

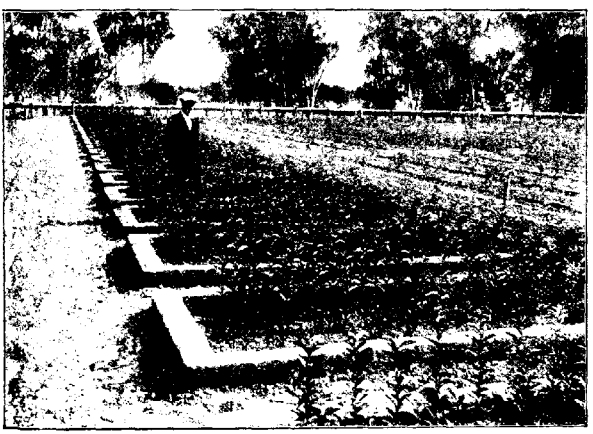
The 2,000 seedling lemon stocks now under process of budding were only planted out from seed last spring, so that one could readily understand the popularity this stock obtained with nurserymen

The sour orange stock block, which consisted of about 25,000, was being budded with buds obtained principally from Mildura, and, as

far as practicable, the buds were taken from trees of good behaviour, both as regards quality of fruit and bearing habit.

He hoped to be able to have trees from Wahgunyah ready for the growers in the spring of 1917, and thence onwards an increasing supply sufficient to meet the requirements of the State.

Mr. D. B. Smith (Chairman of the Vinegrowers' Progress Committee) stated that he wished Mr. Richardson to convey to the Hon. the Minister the best thanks of the growers for the work that was being carried out in the interest of the growers, and for the general development of the viticultural and citrus fruit industries of the State. From what they had seen that day it was evident that the experts of the Department were working on sound lines, and the growers were well



Rough lemon stock budded; seed sown, September, 1915, State Nursery, Wahgunyah.

satisfied with having such capable men watching the general interests of viticulture. He wished to thank Mr. Adcock for having arranged for the inspection, and Mr. Adcock had proved to be the right man for the position of principal of the college. Their friend, Mr. de Castella, never missed an opportunity to promote the interests of the industry, and the advice that he had given, from time to time, to growers had been appreciated. In Mr. Wilkinson, the vineyard manager, they had a practical man who was closely interested in his work. Mr. Carmody was not so well known to the growers, but the results of his work bespoke of its value.

The Hon. J. Bowser, M.L.A., stated that he was delighted to have the opportunity of viewing the work being carried out by the Department. The nursery was a credit to the officers, and it was a pity that

more members of Parliament did not visit it and view the fine work that the Department was carrying out to have the vineyards of the State reconstituted, and to give the people good citrus trees - true to name.

A vote of thanks to the Department was then carried with applause.

In responding to a vote of thanks to the Department of Agriculture, Mr. A. E. V. Richardson, M.A., B.Sc. (Agricultural Superintendent), said that the number of grafted and ungrafted resistant stock applied for during the past three years averaged 1,000,000 per annum, of which, approximately, 700,000 were for grafted rootlings, and 300,000 for ungrafted rootlings. Three years ago, the Department could supply only one vine for every five applied for. The limiting factor hitherto controlling the output was the limited supplies of mother wood. During the past three years, therefore, special attention had been focussed on augmenting supplies of mother wood. A 20-acre vineyard at Violet

Sour orange stock ready for budding; seed sown, October, 1914, State Nursery, Wahgunyah.

Town was taken over by the Department and grafted with mother stocks: the area at Chateau Tahbilk was extended and placed under irrigation; a new 30-acre vineyard of resistant wood was planted in 1914 at the Viticultural College, and extensions had been made in the mother-stock area at Wahgunyah. To cope with the increasing output the nursery area was doubled, and a powerful pumping plant installed. The result of these extensions would mean that the demand would be rapidly overtaken. In the nursery, 500,000 ungrafted rootlings and 220,000 grafted rootlings had been planted during the past year, and, in view of the favorable "strike," the College expected to distribute a total of 500,000 grafted and ungrafted. That is to say, they were now supplying one vine for every two ordered. Within the next two years it was probable that every applicant would be supplied with his full quota of vines. If

the present demand could be fully met, it would mean that reconstitution would be proceeding at the rate of 2,000 acres per annum. But there was no reason why the demand for resistant stock should not increase beyond a million per annum. The prospects of the viticulture industry had never been brighter. Reconstitution had now passed the experimental stage, and had become an acknowledged success. Australian wines were at last coming into their own, and there was an almost unlimited demand in the markets of the world for good Australian wines at highly profitable prices. Under these circumstances it was eminently desirable that the viticultural industry should expand, and expand rapidly, and the Department was determined to keep pace with the enterprise of the vignerons, and accelerate the output of resistant stock until the full requirements of the industry were met. During the past two years a citrus nursery had been established at Wahgunyah. Twenty-two thousand trees were being budded this autumn with Washington navel oranges, and other varieties, and these would be distributed next year at reasonable prices to settlers and others who intended to take up citrus culture. Many difficulties had to be overcome at the outset, but, thanks to the enterprise of Mr. Carmody, they had now largely been surmounted, and from now on there would be a steadily increasing output of trees to supply the needs of settlers. Mr. Richardson said that he would convey to the Minister and Director the vote of thanks passed by the growers, and he was sure that the Minister would be gratified to learn that the growers were fully satisfied with the work that had been done at the nursery, and that they had no requests to make. The success of the work at Wahgunyah was due to the enthusiastic co-operation of those directly responsible for the work, namely, Messrs. Adcock, de Castella, and Carmody, and particularly to the vineyard manager, Mr. Wilkinson, who showed in every detail of his work the touch of the master hand.

This concluded the business of the afternoon, and those present turned homeward, well satisfied that they had spent a pleasant and very interesting afternoon.

COMPOSITION OF FROZEN ORANGES AND LEMONS.

The principal changes caused in citrus fruits by freezing is an excessive loss of moisture. This is shown by a marked lowering of specific gravity. The percentages of sugar and acid decrease slightly but definitely.

Since the change in the composition of the juice is slight, the edible qualities are not impaired if the fruit is not frozen so severely as to cause it to dry up.—H. D. Young, in *Journal of Ind. and Eng. Chem.*, December, 1915.

GOVERNMENT CERTIFICATION OF STALLIONS.

NINTH ANNUAL REPORT (SEASON 1915) ON THE VETERINARY EXAMINATION OF STALLIONS FOR GOVERNMENT CERTIFICATE OF SOUNDNESS AND APPROVAL.

By W. A. N. Robertson, B.V.Sc., Chief Veterinary Officer.

The ninth year of the examination of stallions for Government certification has been brought to a satisfactory conclusion, notwithstanding the many difficulties which were encountered, which originated from the depletion of the veterinary staff by the exigencies of the European war. Only one member of the staff was unable to "fall in" behind the flag, to the honour of which Australia has so liberally subscribed.

Fortunately, we were able to add one officer to our staff, in the person of Mr. W. M. Lerew, G.M.V.C., who has had considerable experience as a practitioner in the Hamilton district, and who had been unable to volunteer for active service. By the courtesy of the Defence Department, we were, in addition, enabled to call upon the services of Lieut.-Colonel E. A. Kendall and Captain R. N. Johnstone for a limited period, such officers not having left our shores.

Finally, by requisitioning the service of Mr. W. J. Cother, Chief Inspector of Stock, who had previously been attached to the veterinary staff, we were able to fulfil all engagements, which had—in anticipation of difficulties to be encountered—been considerably curtailed, and here I would like to express my thanks to those agricultural societies who, in response to a circular letter pointing out the difficulties of the situation, arranged in some cases for amalgamation with adjacent societies or for strict adherence to the time-table, and in others, where no horses were coming forward, for abandonment of the parade. In this way we were enabled to get through the season by conducting 96 parades instead of 113 as in the previous year.

ARRANGEMENTS FOR COMING SEASON.

For the coming season even greater difficulties are to be encountered, for we will be unable to rely upon the Defence Department for assistance, the officers concerned having either left or about to leave for service abroad, whilst Mr. Lerew is engaged in the work of purchasing remounts. It is possible the latter officer will be available when the parades commence, but in order to keep appointments as far as possible a time-table has been arranged on the basis of one officer only being available. In order to get through with the examination before the shows and mating season, this will necessitate a slight curtailment on last year's operations, and in some cases the distance between places at which parades are arranged will be extended. Some owners will probably require to travel their stallions a greater distance than in the past, but it is hoped that the difficulties will be appreciated; and that consideration which has been shown in the past will be extended over the coming

season. In many cases the examination will be conducted while the train waits at the station, and secretaries of agricultural societies will greatly assist by making the necessary arrangements and so conserve the time of the veterinary officer.

It is possible that the arrangements, as shown in the time-table published, will require considerable amendment when the Railway Department issue their winter time-table, therefore owners of stallions will find it advantageous to arrange to submit their stallions at parades arranged for in main lines as far as possible in order to avoid disappointment should it be found impossible for an officer to attend on branch lines as now proposed.

At the 96 parades held last season, 355 horses were submitted for examination, and the action taken by the individual officers concerned in the examination is shown in the following table:—

Officer.	Number Examined.	Number Certificated.	Number Rejected.	Per cent. Rejected.
Mr. E. A. Kendall, B.V.Sc.	6	6	...	...
Mr. R. Griffin, M.R.C.V.S.	123	74	49	39·83
Mr. R. N. Johnstone, B.V.Sc. ...	100	60	40	40·00
Mr. W. M. Lerew, G.M.V.C. ...	101	64	37	36·63
Mr. W. J. Cother, G.M.V.C. ...	20	15	5	25·00
Appeal Boards	5	1	4	80·00
Totals	355	220	135	38·03

EXAMINATIONS AND REJECTIONS.

The total number of stallions examined, viz., 355, was a considerable reduction on that of the previous year, when 603 were submitted. A large proportion of this difference was probably due to the restricted number of parades and abandonment of country shows, owners preferring to let the examination stand over until normal conditions are resumed, though restricted importations were accountable for a considerable number, as the following table shows:—

IMPORTS OF HORSES FROM GREAT BRITAIN AND NEW ZEALAND.

HORSES FROM GREAT BRITAIN.

Year.	Shires.	Clydesdales.	Thoroughbreds.	Other.	Total.
1910–11 ..	51	4	65	14	134
1911–12 ..	67	38	39	27	171
1912–13 ..	7	3	62	3	75
1913–14 ..	2	7	21	7	37
1914–15 ..	..	..	49	1	50

FROM NEW ZEALAND.

Year.	Draught Horses.				Light Horses.				Grand Total.
	Stallions.	Mares.	Geldings.	Total.	Stallions.	Mares.	Geldings.	Total.	
1910–11	292	1,786	758	2,836	11	16	10	37	2,873
1911–12	246	452	208	906	12	35	14	61	967
1912–13	173	113	40	326	4	19	9	32	353
1913–14	125	51	6	182	5	9	6	20	202
1914–15	48	51	..	99	2	..	5	7	106

Of the number examined, 135, or 38.03 per cent., were rejected. As in previous years sidebone, amongst the unsoundnesses, was responsible for the greatest number of rejections in draught horses, viz., 39, or 16.32 per cent., or 10.98 per cent. of the total number examined; this percentage is higher than has been noted during the past four seasons, and is probably due to the fact that a much smaller number of individuals has been dealt with, it being always found that the percentage is higher as the total diminishes. An example is shown in the unsoundness curb, where 2.82 per cent. of light horses were affected, whilst to the total number only .84 per cent. were rejected on this account. The number of rejections on the grounds of being below reasonable standard also shows a slight increase, and the same reason may be applied here.

The subjoined table shows an analysis of the examination for the season:—

ANALYSIS OF DEFECTS OF REJECTS, SEASON 1915–16.

	Draughts.		Lights.		Ponies.		Totals.	
	Examined.	Certificated.	Examined.	Certificated.	Examined.	Certificated.	Examined.	Certificated.
	239	144	71	48	45	28	355	220
	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.
Unsoundness.								
Bog Spavin	..	..	..	..	..	..	..	..
Bone Spavin	1	·42	3	4·22	..	..	4	1·13
Cataract	..	..	..	..	..	..	..	..
Chorea (shivering)	1	·42	..	..	..	..	1	·28
Curb	..	..	2	2·82	1	2·22	3	·84
Navicular Disease	..	..	..	..	..	..	..	..
Nasal Disease	..	..	..	..	..	..	..	..
Ringbone	1	·42	..	..	..	..	1	·28
Roaring	4	1·67	..	..	..	..	4	1·13
Sidebone	39	16·32	..	..	..	..	39	10·98
Stringhalt	..	..	..	..	..	..	..	..
Thoroughpin	..	..	..	..	..	..	..	..
Whistling	1	·42	..	..	..	..	1	·28
Total unsoundnesses	47	19·67	5	7·04	1	2·22	53	14·93
Disapproved	48	20·08	18	25·35	16	35·55	82	23·10
Total rejected	95	39·75	23	32·39	17	37·77	135	38·03

RE-EXAMINATION.

During the season 1914, 267 stallions, 4 years old and under, were given season certificates; of this number only 161 were presented for re-examination as shown hereunder:—

HORSES SUBMITTED FOR RENEWAL OF CERTIFICATES, 1915-1916.

Reasons for Rejection.	3 years.		4 years.		5 years.		Totals.	
	Examined.	Certificated.	Examined.	Certificated.	Examined.	Certificated.	Examined.	Certificated.
	8	6	52	40	101	69	161	115
	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.	Rejected.	Per cent. Rejects.
Disapproval	1	12·50	5	9·61	14	13·86	20	12·42
Sidebone ..	1	12·50	5	9·61	14	13·86	20	12·42
Curb ..	..	..	1	1·92	..	..	1	·62
Spavin ..	..	..	1	1·92	..	..	1	·62
Roaring ..	..	..	..	..	3	2·97	3	1·86
Whistling ..	..	..	..	..	1	·99	1	·62
Total rejections	2	25·00	12	23·07	32	31·68	46	28·57

2 year olds Certificated 1914-15 ..	16	Presented for re-examination 1915-16 ..	8
3 " " " " ..	125	" " " " ..	52
4 " " " " ..	126	" " " " ..	101
Total	267	Total	161

It would appear from these tables that a number of 2 and 3 year olds in 1914 were put out of use for stud purposes. In 1915 only 25 of the 4 year olds failed to be presented for life certificates.

TRANSFERRED CERTIFICATES.

The number of certificates presented for transfer for Victorian Government certificates is as follows:—

New Zealand	14
New South Wales	1
South Australia	1
Total	16

In addition to the above, two certificates issued in other States were indorsed for recognition at Victorian shows. These were as follows:—

New South Wales	1
Tasmania	1
Total	2

APPEALS.

The number of appeals lodged against rejection by Government officers was five, three being on the question of disapproval and two as regards unsoundness. The boards appointed to deal wtih these cases upheld the action of the veterinary officers in four of the cases, and recommended the issue of a certificate in the fifth.

LEGAL PROCEEDINGS.

A case of more than usual interest to stallion owners occupied the attention of the Courts during the season. A stallion owner, being charged at the Lancefield Court with having forged a paper, purporting to be a certificate of soundness and approval, issued to a draught stallion, defendant was committed for trial. The following extract from the *Australasian* of 19th February, 1916, reports the interesting features of the case:—"The trial in Melbourne last week of a horse owner on a charge of forgery is of particular interest to farmers. As far back as 1907 a Government certificate of soundness was obtained for a horse, which has since died. The owner of the certificate subsequently made extensive alterations to it, which covered the name, place of parade, and date on which the certificate was issued, and thus purported to apply to another horse. The defendant pleaded guilty, and was bound over to come up for sentence when called upon. Inasmuch as these certificates of soundness are intended primarily to safeguard the interests of owners of mares, the detection of the forgery will serve to give a feeling of greater security, and furthermore a knowledge that conviction of an offence of this kind is in future likely to be punished by fine or imprisonment, or both, to any amount or extent, may serve to prevent any repetition of the offence."

Summary of Nine Years' Work, 1907–1915.

Season.	Draughts.				Lights.				Ponies.				Totals.			
	Examined.	Certificated.	Rejected.	Percentage.	Examined.	Certificated.	Rejected.	Percentage.	Examined.	Certificated.	Rejected.	Percentage.	Examined.	Certificated.	Rejected.	Percentage.
1907–8 ..	403	271	Unsound 96 Disapproved 36 132	23·82 8·93 32·75	301	246	Unsound 32 Disapproved 23 55	10·63 7·64 18·27	214	186	Unsound 10 Disapproved 18 28	4·67 8·41 13·08	918	703	Unsound .. 138 Disapproved 77 215	15·04 8·38 23·42
1908–9 ..	501	341	Unsound 137 Disapproved 23 160	27·33 4·59 31·92	295	242	Unsound 29 Disapproved 24 53	9·83 8·13 17·96	199	159	Unsound 5 Disapproved 35 40	2·5 17·58 20·10	995	742	Unsound .. 171 Disapproved 82 253	17·17 8·24 25·41
1909–10 ..	410	275	Unsound 96 Disapproved 39 135	23·52 9·56 33·08	191	147	Unsound 12 Disapproved 32 44	6·27 16·77 23·04	156	112	Unsound 5 Disapproved 39 44	3·20 25·65 28·94	757	534	Unsound .. 113 Disapproved 110 223	15·04 14·65 29·69
1910–11 ..	542	387	Unsound 117 Disapproved 38 155	21·57 7·01 28·58	143	108	Unsound 15 Disapproved 20 35	10·55 14·08 24·61	128	101	Unsound 7 Disapproved 20 27	5·47 15·62 21·09	813	596	Unsound .. 139 Disapproved 78 217	17·09 9·6 26·69
1911–12 ..	692	554	Unsound 84 Disapproved 54 138	12·13 7·8 19·94	165	120	Unsound 13 Disapproved 31 44	7·87 18·78 26·66	122	83	Unsound 5 Disapproved 34 39	4·09 27·86 31·96	979	758	Unsound .. 102 Disapproved 119 221	10·42 12·15 22·57
1912–13 ..	745	597	Unsound 89 Disapproved 59 148	12·03 7·92 19·73	139	106	Unsound 19 Disapproved 14 33	13·67 10·07 23·74	70	43	Unsound 2 Disapproved 25 27	2·85 35·71 38·57	954	746	Unsound .. 110 Disapproved 98 208	11·59 10·27 21·81
1913–14 ..	718	507	Unsound 79 Disapproved 132 211	11·0 18·38 29·39	157	102	Unsound 16 Disapproved 39 55	10·19 24·84 35·03	88	60	Unsound 5 Disapproved 23 28	5·68 26·14 31·82	963	669	Unsound 100 Disapproved 194 294	10·38 20·14 30·53
1914–15 ..	400	267	Unsound 62 Disapproved 71 133	15·50 17·75 33·25	121	75	Unsound 14 Disapproved 32 46	11·57 26·44 38·01	82	55	Unsound 7 Disapproved 20 27	8·53 24·39 32·92	603	397	Unsound .. 83 Disapproved 123 206	13·76 20·40 34·16
1915–16 ..	239	144	Unsound 47 Disapproved 48 95	19·67 20·08 39·75	71	48	Unsound 5 Disapproved 18 23	7·04 25·35 32·39	45	28	Unsound 1 Disapproved 16 17	2·22 35·55 37·77	355	220	Unsound 53 Disapproved 82 135	14·93 23·10 38·03

REGULATIONS

GOVERNING THE EXAMINATION OF STALLIONS FOR THE GOVERNMENT CERTIFICATE OF SOUNDNESS AND APPROVAL.

I.—EXAMINATION PARADES.

(1) Societies within whose district an Inspection Parade is appointed are required to provide a suitable place for the examinations to be conducted, and to suitably and reasonably advertise the holding of the parade on receipt of notice from the Department of the fixture. The secretary or some member of the committee of the society is required to be in attendance at the appointed time to assist the examining officer in the arrangements for the inspection.

(2) The Parades will be conducted and the Veterinary Officer will attend without expense to Societies other than that involved in advertising and making known the occasion to the public and the stallion owners in the district, and providing the examination ground.

(3) The Examining Officer will attend Inspection Parades held at times and places set out in the official Time Table for the year, and all examinations of stallions for the Government Certificate will be made at such Parades or on some such publicly advertised occasion, *unless* under special circumstances as provided for in clause 5.

(4) In the event of it being found impossible for local reasons to hold the Parade in any district at the time and date set out in the Time Table, notice to that effect—together with suggestions for alternative date and time compatible with the rest of the Time Table—should be given *not later than 1st June*, after which no alteration in the Time Table can be made.

(5) The special examination of stallions for the Government Certificate of Soundness at other than the advertised stallion parades may be arranged for in cases where, through accidental circumstances, the owner has failed to submit the horse at such parade.

Such examinations will only be arranged when the attendance of the Examining Officer will not interfere with the requirements of the Department for his services in other directions.

An owner requesting such special examinations will be required to prepay a fee of £1 1s. for each horse examined; also the railway fare (first class return), and travelling expenses at the rate of 14s. per day, of the visiting officer.

II.—GROUNDS FOR REJECTION.

(1) Refusal of Certificate on the ground of unsoundness will be made only when, in the opinion of the Examining Officer, the horse is affected at the time of examination with one or more of the following hereditary unsoundnesses, viz.:—

Bog Spavin	Ringbone
Bone Spavin	Roaring
Cataract	Sidebone
Chorea "Shivering" or "Nervy"	Stringhalt
Curb	Thoroughpin
Navicular disease	Whistling
Nasal disease (Osteo-porosis)	

or such other hereditary unsoundness as the Minister may at any time declare. (Blemishes or unsoundness, the result—in the opinion of

the Examining Officer on appearances then presented—of accident, injury, and over-strain or over-work, will not disqualify.)

(2) For the purpose of these regulations the following shall be the definitions of "Ringbone," "Sidebone," and "Curb":—

(*a*) Any exostosis on the antero or lateral aspect of the phalanges below the upper third of the *Os Suffraginis* shall constitute a Ringbone;

(*b*) Any ossification of the lateral cartilage shall constitute a Sidebone;

(*c*) Any circumscribed swelling on the posterior aspect of the hock in the median line and within the limits of the lower third of the hock and the head of the metatarsal bones shall constitute a Curb.

(3) The Certificate will also be refused in the case of animals considered by the Examining Officer to be below a reasonable standard for Government approval, as regards type, conformation, and breeding.

(4) Stallions three or four years old, which are refused a Certificate as regards type, conformation, and breeding may be re-submitted annually until five years old, after which the refusal shall be subject to review under Part V. of these regulations only.

(5) In the case of horses that have been rejected for any reason whatsoever, a notification containing all particulars of identification shall be sent to all Chief Veterinary Officers of the other States of the Commonwealth as early as practicable after such examination has taken place.

III.—CERTIFICATES.

(1) Particulars concerning the identity of the horse—name, breeder, pedigree, age, prior ownership, &c.—must be furnished to the Examining Officer at the time of examination. If deemed necessary in any case the owner may be called upon to furnish a statutory declaration as to the correctness of such particulars.

(2) Certificates will be issued within seven days of the holding of the Parades, and will be forwarded to the owner direct. Secretaries of Societies under whose auspices the Parade is held will be notified which, if any, of the horses submitted for examination obtain their Certificates.

(3) The owners of stallions for which a Certificate is refused will within seven days of such refusal be officially notified of the fact; the reason for such rejection will also be given.

(4) Until the issue of a Certificate, or until the publication of the official list of certificated stallions, the result of the Veterinary examination will not be communicated to any person except as herein provided or under circumstances as follow:—The Examining Officer may, on request on proper occasion, communicate to the owner or his agent—duly authorized in writing to inquire—the result of the examination. In case of refusal of the Certificate the reasons for refusal will not under any circumstances, save in legal proceedings under the direction of the Court, be communicated to any person except the owner or his agent duly authorized in writing. Secretaries of Societies, persons in charge of the horse, grooms or relatives of the owner will not be considered authorized agents for that purpose unless

they deliver to the officer the owner's signed authority to receive the information.

(5) The Victorian Government Certificate of Soundness can only be issued in respect of horses three years old and over, that have been examined by a Victorian Government Veterinary Officer, or horses in respect of which any of the following certificates are produced:—

The Government Certificate of Soundness of any Australian State or New Zealand.

The Veterinary Certificate of the Royal Shire Horse Society (England).

The Veterinary Certificate of Royal Agricultural Society (England).

The Veterinary Certificate of Royal Dublin Society (Ireland).

The Veterinary Certificate of Highland and Agricultural Society (Scotland).

The Veterinary Certificate of Glasgow and West of Scotland Agricultural Society.

The Veterinary Certificate of the Board of Agriculture and Fisheries (England).

The Veterinary Certificate of the Board of Agriculture (Scotland).

Provided that such horses have been examined in accordance with these regulations.

Any horse which has been rejected by the Veterinary Examiners for any of the above certificates will not be eligible for examination for the Victorian Government Certificate of Soundness.

(6) The form of the Victorian Government Certificate of Soundness is as follows:—"G.R.—Department of Agriculture, Victoria, No. . Certificate of Soundness and Approval, issued for the season (*or issued for Life as the case may be*), given in respect of the (*breed*) stallion (*name and description of stallion*) submitted for Government inspection by the owner (*name of owner*) at (*place of examination*) such horse having been found suitable for stud service and free from hereditary unsoundness and defects of conformation predisposing thereto on examination by (*signature of Examining Officer*) Veterinary Officer on the day of 19 .

(Signature).

Chief Veterinary Officer.

Issued by direction of the Minister of Agriculture.

(Signature).

Director of Agriculture."

(7) Two-year-old colts may be submitted for examination and a temporary certificate will be issued in respect of such as pass the examination. Such temporary certificate must not be taken to imply suitability for stud service of approval as regards type, nor is the issue of it intended as an indication of the likelihood of a certificate being issued when submitted for examination at a more mature age.

(8) The season in respect of Government Certificates shall be considered as opening on 1st July Stallions passing the examination any

time during the three months previous to this date in New Zealand or Australia will be granted a Certificate for the season next following. In respect of stallions examined in Great Britain examinations on or after 1st January will be considered as examinations for the following season.

IV.—TENURE OF CERTIFICATE.

(1) Certificates issued during the season in respect of horses five years old and over are life certificates; those for three-year-olds and four-year-olds are season certificates only, and such horses must be submitted for re-examination at four and five years before a life certificate will be issued.

(2) The Season certificate issued in respect of any horse must be handed to the Examining Officer at the time of re-examination or forwarded to the Chief Veterinary Officer before a subsequent Season certificate or a Life certificate will be issued.

(3) The Minister retains the right to at any time have a certificated stallion submitted for re-examination, and to withdraw the certificate, in the event of the animal being declared, to his satisfaction, unsound.

V.—BOARD OF APPEAL.

(1) Any owner of a stallion who is dissatisfied with the refusal of a Government certificate in respect of his horse may appeal against the decision to the Minister at any time within *thirty* days of the examination, under the following conditions:—

(*a*) That the appeal be in writing and be accompanied by the lodgment of £5, such amount to be forfeited in the event of the appeal *not* being upheld, unless the Board shall for good cause otherwise direct.

(*b*) That the appeal be accompanied by an undertaking to pay any railway fares and hotel expenses incurred by the Board of Appeal in connexion with the settlement of the appeal.

(*c*) That, in the event of refusal having been on the ground of unsoundness, the appeal be accompanied by a certificate from a registered Veterinary Surgeon setting out that the horse has been found by him on examination since the refusal appealed against to be free from all the unsoundnesses set out in Part II. of these regulations.

(*d*) That, in the event of refusal having been on the ground of being below standard for Government approval, the appeal be accompanied by a certificate from the President and two members of the Committee of the Society under whose auspices the parade was held, setting out that in their opinion the horse is of fit and proper type, conformation, and breeding to be approved as a stud horse.

(2) On receipt of Notice of Appeal in proper form, and with the above conditions complied with, the Minister will appoint a Board of Appeal, which shall consist of:—

(*a*) In the case of appeals against refusal of certificate on the ground of unsoundness, the Chief Veterinary Officer and two practising Veterinary Surgeons.

(*b*) In the case of appeals against refusal of certificate as being below standard for Government approval, the Chief Veterinary Officer and two horsemen of repute and standing.

Such Board shall act and decide on the appeal, and its decision shall be final, and *not subject to review*.

(3) In the event of the appeal being allowed, refund shall be made of the deposit and any expenses paid by the appellant under Clause 1 (*b*). Further, the Board may recommend to the Minister the allowance of such of the expenses of the appellant in supporting his appeal as it may consider reasonable under the circumstances of the case, and the Minister may, in his discretion, confirm the recommendation in whole or in part, whereupon allowance shall be made to the appellant accordingly.

(4) No stallion in respect of which a Government certificate is refused will be allowed to be re-submitted for examination except in the case of an appeal or in such case as when a three or four years old stallion has been refused on account of type as herein provided for. In the event of any rejected stallion being re-submitted for examination under another name or under such circumstances as in the opinion of the Minister are calculated to mislead the Examining Officer into the belief that the horse has not previously been examined, the owner of such rejected stallion, if proved to the satisfaction of the Minister that he is responsible for such re-submission, shall be debarred from submitting any horse for examination for such period as the Minister shall determine.

NOTICE TO SECRETARIES OF AGRICULTURAL SOCIETIES.

Section "A" of the conditions to be complied with by Agricultural Societies before being eligible for participation in the annual Government grant is as follows:—

> "*A.—That the awards of prizes in all classes for stallions, three years old and over, at the Society's Show must be subject to the possession by the exhibit of a Government certificate of soundness.*"

In order to comply with the above, the special attention of show secretaries is invited to the receiving of entries in stallion classes. No entry should be received unless at the time of entry the Government certificate is produced, or unless satisfactory evidence is given that a Government certificate is held by the owner in respect of the exhibit. The awarding of a prize card and the withholding of prize money in respect of any exhibit shall not be deemed as compliance with the condition. Care should be taken also to see that the certificate is not out of date, that is to say:—

For three-year-olds, a 1916 three-year-old certificate must be held.

For four-year-olds, a 1916 four-year-old certificate must be held (the 1915 certificates are out of date).

For horses five years old and over, a life certificate must be held.

Horses holding Government certificates issued by any other State are not eligible to compete at shows unless such certificate is endorsed by the Victorian Department, "Recognised for Victorian Shows."

Particular attention is directed to the method now in vogue of classifying certificated stallions. The list is now divided into horses carrying a life certificate and those which are terminable, and supplementary lists will be issued annually which should be added to those listed in Bulletins No. 30, No. 17, No. 24, and No. 30 (New Series).

Secretaries are strongly urged to become familiar with the regulations, particularly Regulation IV., which deals with the tenure of certificates.

Secretaries are required to *forward immediately after the show* a return (forms for which will be sent to each society) giving required particulars concerning 1st, 2nd, and 3rd prize winners as under:—

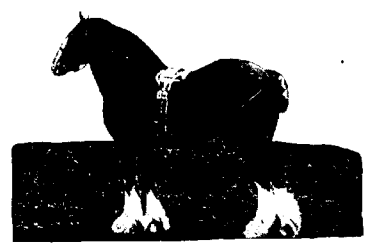
RETURN to be forwarded to the Chief Veterinary Officer concerning Stallions (three years old and over) awarded Prizes at the ..... Agricultural Society's Show held .....

Name of Stallion.	Certificate Number.	Name of Class and Section (not Number).	Prize Awarded.			Owner's Name.	Owner's Address.
			1st.	2nd.	3rd.		

(Signed) .....

Secretary ..... Agricultural Society.

Date .....



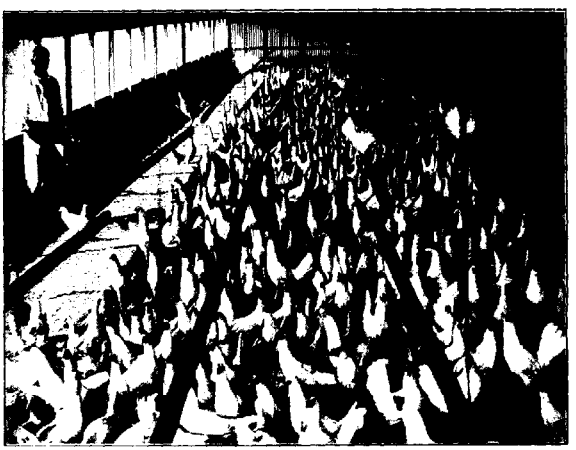
PRACTICAL POULTRY KEEPING.

ADOPT A SYSTEM.

By A. Hart, Chief Poultry Expert.

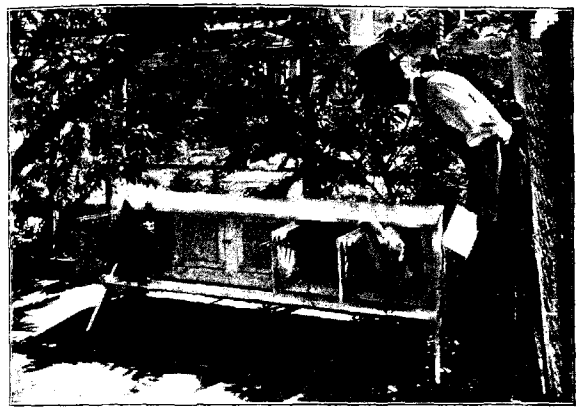
Hints to Beginners.

In these days of keen competition in the poultry-keeping industry everything in connexion with the business must be conducted on up-to-date lines. Money, of course, is the sole object in view of the man who keeps poultry for profit only. But even in his case it is absolutely necessary to select the very best possible strain and feed and care for the birds on up-to-date lines if success is to be obtained. The best stock are the cheapest in the end, and the proved methods of keeping and feeding the birds should be practised by every beginner in the business. In



Successful poultry keeping in large flocks.

making a start the beginner must first decide what varieties he will keep. If eggs are desired as the sole source of profit, then White Leghorns should be his selection. But if a combination of egg production and rearing table poultry for market is wanted, then he must select some other breed as well as White Leghorns. We have Orpingtons, Wyandottes, Rhode Island Reds, Plymouth Rocks, Faverolles, and Sussex, which are all useful in the production of general utility or all-round stock. But as eggs are at present the main source of return from poultry in Victoria, I would advise the beginner to select White Leghorns for

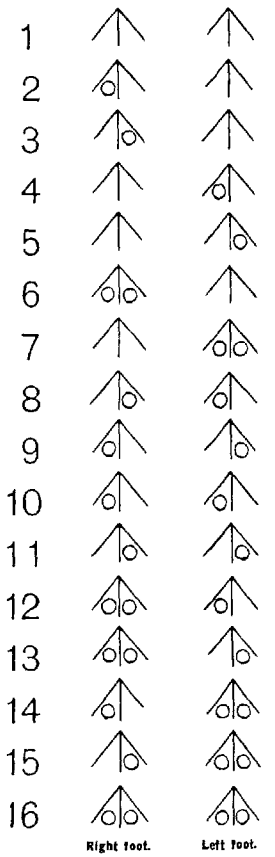


Trap nests. By the use of these nests it is possible to discover the hens that pay and those that do not.

Woman's work. Results obtained during the first year by a successful beginner.

the greater proportion of his flock. The beginner who wishes to improve his stock should start with birds of the very best possible laying strain, procuring cocks or cockerels unrelated and bred from high-grade layers. It is just as necessary to have good laying strains on the male bird's side as it is to have it on the side of the hens. By starting with birds as

described above you have good material to work upon. As the beginner may experience some difficulty in indicating the best layers in his stock I would advise him to use trapnests. By this method he can pick out his best egg producers with certainty, and by breeding from none but tested layers he can improve the young stock to a marked degree. By adopting the plan of marking your birds with rings you can keep a record of each hen's egg production. Celluloid rings of different colours can be procured, and all that you have to do is to note the colour of the ring as she leaves the nest, and mark the egg accordingly.

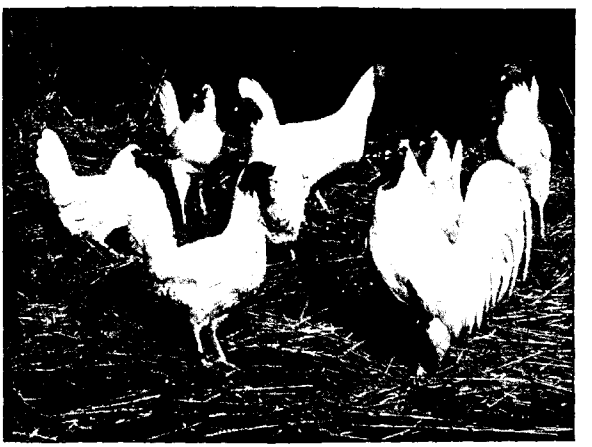


Punch marks on feet for identification of the different strains and mating. These marks should be made directly birds leave incubator.

Another point which is essential in breeding strong and vigorous young birds of good constitution is to allow your breeding birds plenty of range. A small pen is not conducive to the production of strong chickens and fertility, and although good stock may be hatched under these conditions better birds still would be produced from the same parents if allowed more room. Animal food is also very useful in procuring good results in hatching, as well as increasing the egg production. But too much is harmful and about ½ an ounce to each bird two or three times a week will generally be sufficient for stock birds. The food given should be fresh, sound, and sweet. The grain should be plump and clean. Wheat is, of course, the staple grain, but oats, peas, and maize are also to be recommended in small quantities. Plenty of green food should be given every day, about noon being the most suitable time to give it. The morning meal should be a warm mash composed of pollard, bran, peameal, and oat pollard moistened with meat soup or warm separated milk or water, working it to a crumbly consistency. Fresh water should be regularly supplied, and the vessels thoroughly cleaned out every day. Plenty of shell grit and charcoal should be provided, and a dust bath is also very necessary, consisting of wood ashes, sand, and sulphur. The roosting house should be kept thoroughly clean, and a sharp lookout made for red mites or other forms of pests which infest poultry. Nest boxes should be kept very clean and well lined

with fresh straw so as to insure the eggs being clean. Eggs do not improve in looks by being washed, and the best method is to keep them clean by having the nests prepared so that they do not become stained or lose the fresh appearance they have when laid.

This pen has been specially mated up to produce prolific layers.



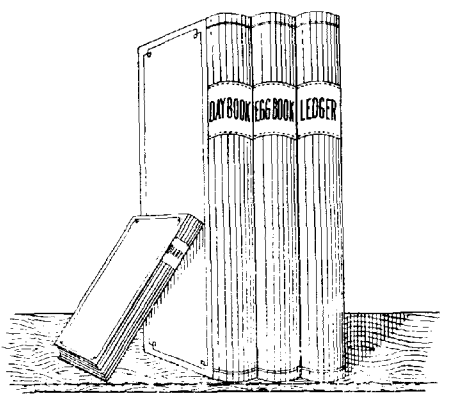
This pen has been specially mated up to produce cockerels to improve the size of the egg.

Adopt a System.

The poultry-keeper who starts in this business and wishes to become a practical man must use a system. Book-keeping is quite as necessary in connexion with profitable poultry-keeping as it is in any other business. A cash-book will indicate the daily receipts and expenditure in

connexion with your fowls. A ledger will show how the businesss stands from month to month, and in connexion with an egg record, will tell you how the stock are producing. A diary will also be very useful for writing down the doings of each day, and must form a very valuable book of reference for the owner of the farm.

It does seem strange that so many poultry-keepers do not keep full and correct accounts of their business. If this system were regularly practised, I venture to say that the poultry industry would be much improved. If poultry-keepers want to know if their stock is paying, if they want to know when a change of breeding birds is necessary, if they want to know anything certain about the business, the only reliable method is to adopt a system and keep books. Four books will be quite sufficient. A cash-book, a ledger, an egg-record book, and a diary will be required, and if kept properly the poultry-keeper will certainly admit that the system is well worth the extra trouble entailed.



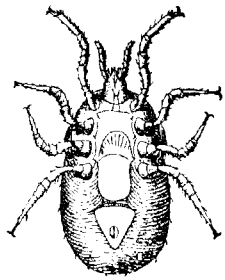
Key to Success.

The cash-book will show you exactly the amount of business you did on every day of the previous year, also the price of the food purchased. The price of buildings, as well as many other items of interest will be in the cash-book for reference, and its value is only known to those who have given it a trial. The ledger will give you full particulars of the receipts and expenditure for the past year, and will show you whether your business has been a success. The egg-record book will indicate with certainty the quantity of eggs produced by birds from the different pens, the time when they commenced laying, the birds which contracted broodiness, and a great deal of other essential information. The diary is one of the most useful books in the set. It is a daily record of all that happens in connexion with the business you are engaged in, showing a complete record of what takes place every day. As a book of reference it is invaluable, and for this reason alone no poultry-keeper should be without a dairy kept on up-to-date lines. The adoption of a system

on the above lines must be especially valuable to all poultry-keepers who take an interest in the business, and it can be termed one of the main stepping stones towards success in this industry.

Red Mite.

One of the most common as well as the most annoying of the parasites that infest the poultry houses and their inmates is what is known as the red mite. It is one of the smallest of these pests, but it multiplies so quickly that myriads will be found in a few weeks after it first makes its appearance. Although known as red mite, this parasite is is naturally grey in colour, the reddish tinge to the body being given by the blood it sucks from the fowls it preys upon. The eggs are laid on the fowls themselves, and can often be seen in thousands attached to the feathers. They will also be found in cracks and crevices of the fowl-house or other buildings. The heat of the fowl will encourage the hatching of the eggs which are attached to the feathers, and the approach of warm weather will also act similarly on the eggs that are in sheltered parts of the fowl-house. They quickly attain full size, and at once proceed to annoy the fowls by sucking the blood from them. Although all of them do not always stay on the fowl, it will be found that a good proportion of them do so, the remainder filling themselves with blood and then going back to the roosts or boxes. In the case of chickens the red mite is especially harmful. They infest them in such large numbers that they quickly suck the greater portion of the blood out, and the chicken literally weakens and dies through their ravages. When hens are used for hatching purposes, the red mites will prove a very serious trouble unless strict supervision and certain preventives are used. Sittings of eggs are often spoilt through the red mite, amateur owners not finding out what is the cause until the hen has left her eggs and the chickens are dead in the shells. When chickens are reared in brooders, the red mite is also likely to make its appearance, and if not exterminated, will speedily cause many deaths among the inmates. You may see a number of chickens with the back of their heads and necks slightly bare, their wings drooping, and their general condition indicating that they are full of disease. On examination it will be found that it is the red mites that are causing all the trouble, and with their speedy eradication the chickens will quickly improve and throw off all signs of disease.



Red Mite

(magnified 85 times).

There are several methods of eradicating these pests, but the system of prevention is the best of all cures. By applying the remedies during the winter months you effectively prevent the eggs from hatching, and if this is done properly, the task of keeping the mite down during the summer and autumn months will be comparatively light. The most effective remedy for red mite is spraying or painting the places where the eggs or mites accumulate with kerosene. The spraying is the quickest method, and any ordinary garden spray with a fine nozzle will answer the purpose. Painting with a soft and fairly large brush is also suitable, but

in any case it is absolutely necessary that the whole of the building should receive its share. If any crack or crevice remains untouched, the operation is practically useless. Another remedy is kerosene emulsion. This is made by boiling a gallon of water and adding about a pound of soft soap. Then stir in a quart of kerosene and apply as hot as possible with either a spray or brush. A coating of boiling tar to which a little pitch is added may be used. This will kill the mites and also fill up cracks or crevices. Washing with hot limewash is also a remedy. There are also several forms of insect powder and ointments which are useful in eradicating red mites. Kerosene or emulsion will, however, be found an effective as well as a cheap remedy.

FIELD CROP COMPETITIONS (POTATOES).

By J. T. Ramsay, Potato Expert.

Continuing their efforts to foster the potato-growing industry in their respective districts, the Agricultural Societies of Pakenham, Leongatha, Trafalgar, and Yarragon (the latter two in conjunction), again offered prizes for the best crops for the season 1915-16. For this the societies are to be commended.

Their example might be followed with profitable results by the societies of other districts, not only for potato crops, but for every crop commercially grown. Competition is the soul of business, and it is equally true that competition in crop-growing is the best whip that is possible of application, to induce land-holders to put that interest and applied knowledge into practice. These two things only can raise the average production of their acres and elevate the standard of their operations to a plane worthy of the name of farming.

Such competitions cannot but have an all-round beneficial influence. The leavening of friendly rivalry created by them must of necessity promote effort to increase knowledge of how soils can best be husbanded to increase their productiveness, and how crops can best be treated so that their prolificacy may be augmented. The acquirement of that knowledge, coupled with the desire to eclipse the results obtained by other growers, must develop interest which will find expression in its practical application to the cultivation of crops, with the necessary result that higher all-round yields will obtain than can possibly be secured by what might be termed a *laissez-faire* system of farming.

These being self-evident truths, the societies promoting these competitions deserve every support by the growers in their respective districts. If these growers would only realize that in supporting and making the competition a success they were not merely advertising the society, but advertising the district and their own wares in a most effective manner, there would be no paucity of competitors for the honour of securing the distinction of having produced the best crop of the season.

It may be argued that the growing of a few acres for a competition would not affect the standard of cultivation of the larger areas generally grown commercially. A moment's consideration should be sufficient to prove the fallacy of such argument. The educational benefit derived from the practical demonstration of the increased yield from the small area on which more intense cultural methods were practised would make it obvious that these methods produce returns showing a greater proportionate profit, and would have the effect of causing these improved methods to be applied to the larger areas.

Pressure forced the wheat farmers of Australia to use improved methods of farming in producing their wheat.

Pressure likewise will compel the farmers of other crops to improve their methods. These competitions, if properly availed of by growers, will do much to anticipate this economic pressure, which, although a useful and effective lever for improving the output of any industry, is often an unpleasant experience to those attached thereto.

In judging these crops a maximum of 100 points was divided as follows:—

Evenness of crop	10	points
Cleanliness of crop as regards cultivation and disease	10	,,
Quality of crop	45	,,
Weight per acre	35	,,

In allotting points for weight, the crop scoring highest in that section was given full marks, and the others were given marks pro rata. Some very heavy yields were recorded. In the Pakenham competition, the winner, Mr. J. Savage, had a nice crop estimated to scale 11 tons per acre of marketable tubers. In the Trafalgar and Yarragon competition, Mr. T. Coonerty topped the Carman class with a 17-ton crop. Mr. W. Dowton, in the class for any other variety, had two entries which would yield 14 and 17 tons respectively per acre, but which were, unfortunately for him, disqualified, because his area was not up to the measurement demanded by the conditions of the competition, and the first place was taken by Mr. H. Best, who was next highest in points.

Mr. J. Geale scored heavily in the Leongatha competition with a magnificent crop of 18 tons to the acre.

The quality of the crops, with few exceptions, would have been much improved had the growers adopted the practice of closer planting than is the rule. Land which is capable of growing 15 to 18 tons of potatoes to the acre is rich enough to carry a full crop with planting distanced 2 ft. 3 in. between the rows, and the sets spaced 14 inches or 15 inches in the rows. Planting at those distances, or even less on the richer lands, would have the effect of producing heavier yields of medium sized and better quality tubers. The grower who produces tubers as large as marbles has his system of planting to blame. He should plant closer, and so restrict the feeding area of the plants. The result would be improvement in size, improvement in quality, and equally heavy, if not a heavier, tonnage. In estimating the weights per acre, one row representative of the average of the whole area was selected, and one chain long dug out of it. The result was multiplied by ten times the number of rows planted to one chain width. The only margin of error permitted by this system of calculation is possible in estimating what is a fair average row of the area.

The results of the various competitions are given herewith.

PAKENHAM AGRICULTURAL SOCIETY'S COMPETITION.

Potatoes.

—	Evenness.	Cleanness.	Quality.	Weight.	Total.
	10	10	45	35	100
J. Savage	9	9	38	35	91
M. Sexton	9	10	40	26	85
J. Dixon	9	9	40	26	84
McW. Piper	8	8	43	24	82
McCarthy Bros.	7	7	40	26	80
M. Cunningham	9	9	38	23	79
T. Anderson	6	9	45	19	79
T. Clapperton	7	9	43	18	77
C. G. Reid	7	7	42	16	72
J. B. Reid	8	8	45	10	71
A. S. Reid	8	8	45	9	70
W. A. Reid	8	7	43	7	65

TRAFALGAR AND YARRAGON SOCIETIES' COMPETITIONS.

Potatoes.

CARMAN CLASS.

—	Evenness.	Cleanness.	Quality.	Weight.	Total.
	10	10	45	35	100
T. Coonerty	9	9	40	35	93
W. J. Casey	9	8	42	28	87
J. F. Young	8	8	41	25	82
C. Tucker	8	9	42	23	82
D. L. Young	9	9	40	23	81
H. Best	8	9	42	21	80
G. Mulcahy	8	9	42	18	77
W. A. Tyrrell	9	10	40	17	76
J. A. Briggs	9	8	41	17	75

ANY OTHER VARIETY.

Name.	Variety.	Even-ness.	Clean-ness.	Quality.	Weight.	Total.
		10	10	45	35	100
W. Dowton ..	Gold Coin ..	8	10	39	35	92
W. Dowton ..	Dates	9	10	41	29	89
H. Best	„	8	10	43	21	82
J. A. Briggs ..	„	9	8	43	21	81
W. J. Casey ..	Cook's Favorite	8	9	40	23	80
D. L. Young ..	„ „ ..	10	9	40	19	78
C. Tucker	„ „ ..	8	9	41	18	76

LEONGATHA AGRICULTURAL SOCIETIES' COMPETITION.

Potatoes.

Name of Grower.	Evenness.	Cleanness.	Quality.	Weight.	Total.
	10	10	45	35	100
J. Geale	8	8	43	35	94
N. E. Hayes	8	7	42	14	71
W. M. Hayes	4	4	40	15	63

The result of five crops of one acre of maize for fodder which were entered for a prize given by the Trafalgar and Yarragon Societies is also given here.

The winner of this, Mr. C. Tucker, had an exceptional crop of beautiful quality Hickory King maize, which did him great credit, and which was estimated (by the same means used in arriving at the weights of the potato crops) to yield 40 tons per acre of succulent green maize.

MAIZE.

Name.	Cultivation.	Method of Sowing.	Quality.	Yield.	Cleanness.	Freedom from Disease.	Total.
C. Tucker	9	10	18	40	9	10	96
H. Matthews ..	8	10	17	33	9	10	87
M. O'Brien ..	8	8	17	30	8	10	81
R. S. Young ..	10	10	13	28	9	10	80
A. Cuthbert ..	7	6	14	25	8	10	70

STANDARD TEST COWS.

QUARTERLY REPORT FOR PERIOD ENDED 31st MARCH, 1916.

During the period 50 cows completed their term under the regulations. Of this number 38 qualified for their certificate.

Individual returns are as follows:—

Mrs. A. BLACK, Noorat. (Jersey.)

Completed since last report, 2. Certificated, 1.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Madge	3575	27.5.15	3.6.15	273	12	4,024½	5·04	233·04	200	265½

DEPARTMENT OF AGRICULTURE, Werribee. (Red Poll.)

Completed since last report, 16. Certificated, 14.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Connecticut ..	Not yet allotted	3.4.15	10.4.15	273	21	7,204½	4·75	342·36	250	390½
Panama	..	12.4.15	19.4.15	273	17	5,869	4·23	248·45	200	283½
Vuelta	..	25.4.15	2.5.15	273	20	8,511½	4·03	344·89	250	381½
Philippina	..	26.4.15	3.5.15	273	19	7,122½	4·82	343·15	250	391½
Primrose League (imp.)	..	10.5.15	17.5.15	273	19½	6,851	4·34	296·27	..	337½
Alpina	..	13.5.15	20.5.15	273	15½	6,357	4·00	254·28	250	289½
Turka	..	16.5.15	23.5.15	273	32½	6,362½	4·96	315·62	250	360½
Cameo	..	23.5.15	30.5.15	273	15½	5,873½	4·72	277·32	250	316½
Sumatra	..	24.5.15	31.5.15	273	20	7,191½	4·40	320·71	250	375½
Tennessee	..	26.5.15	2.6.15	273	14½	5,075½	4·09	207·77	200	236½
Mexicana	..	1.6.15	8.6.15	273	16	7,069	4·39	349·54	250	398½
Asiana	..	5.6.15	12.6.15	273	12½	6,367	4·83	295·00	250	336½
Samorna	..	12.6.15	19.6.15	273	10½	5,400½	4·71	254·68	200	290½
Netherlana	..	22.6.15	29.6.15	273	28	9,455½	4·25	402·03	250	458½

GEELONG HARBOR TRUST, Marshalltown. (Ayrshire.)

Completed since last report, 9. Certificated, 3.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Gipsy Maid of Glen Elgin	1818	2.4.15	9.4.15	273	8½	6,180	4·27	264·09	250	301
Ruby of Glen Elgin	1826	6.5.15	13.5.15	273	19	8,558	4·13	352·98	250	402½
Ruby of Sparrovale	2512	18.6.15	25.6.15	273	7½	7,178	4·37	313·42	200	357½

T. HARVEY, Boisdale. (Jersey.)

Completed since last report, 1. Certificated, 1.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Sparkle	2978	29.4.15	6.5.15	273	15	5.091	6·37	324·45	200	360¼

A. W. JONES, Whittington. (Jersey.)

Completed since last report, 1. Certificated, 1.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Lady Grey V. ..	3756	8.6.15	15.6.15	273	32	8,646¼	5·05	436·97	250	485¼

C. G. KNIGHT, Cobram. (Jersey.)

Completed since last report, 2. Certificated, 2.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Romany Lass ..	2563	18.5.15	25.5.15	273	11½	5,063¼	5·63	283·50	200	324¾
Amy Castles ..	1520	31.5.15	7.6.15	273	11	5,512	5·29	293·16	250	334¼

C. D. LLOYD, Caulfield. (Jersey.)

Completed since last report, 1. Certificated, 1.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Doreen	2976	6.5.15	13.5.15	273	8½	5,258	5·13	268·93	200	306½

C. G. LYON, Heidelberg. (Jersey.)

Completed since last report, 2. Certificated, 2.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Hawthorn II. of Banyule ..	3619	1.4.15	8.4.15	273	8	5,151	5·63	307·01	200	350
Velveteen II. ..	2027	2.4.15	*5.5.15	273	23·	8,361	4·59	383·95	200	437½

* Entry deferred, as no weights available.

J. D. READ, Springhurst. (Jersey.)

Completed since last report, 10. Certificated, 9.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Princess of Springhurst	2521	4.4.15	11.4.15	273	8½	5,869	6·05	355·28	250	405
Tulip of Springhurst	2730	10.4.15	17.4.15	273	11	5,735	5·59	320·89	250	365½
Stockings of Springhurst	2663	23.4.15	30.4.15	259	9	5,464	5·05	275·84	250	314½
Eurea of Springhurst	1918	26.4.15	3.5.15	273	5	4,969½	5·54	275·57	250	314½
Graceful Magnet of Springhurst	2058	3.5.15	10.5.15	273	13	6,392	5·37	343·05	250	391
Alsyke of Springhurst	1515	10.6.15	17.6.15	273	8	5,724	5·26	301·07	250	343½
Daisy of Springhurst	1738	14.6.15	21.6.15	273	9½	5,673	5·23	296·56	250	338
Grannie of Springhurst	2059	14.6.15	21.6.15	273	5	5,385½	5·23	281·65	250	321
Hyacinth ..	3705	22.6.15	29.6.15	273	9	3,713	5·89	218·74	200	249½

D. SADLER, Camperdown. (Ayrshire.)

Completed since last report, 2. Certificated, 0.

W. WOODMASON, Malvern. (Jersey.)

Completed since last report, 4. Certificated, 4.

Name of Cow.	Herd Book No.	Date of Calving.	Date of Entry to Test.	No. of Days in Test.	Weight of Milk last Day of Test.	Weight of Milk.	Average Test.	Butter Fat.	Standard required.	Estimated Weight of Butter.
					lbs.	lbs.		lbs.	lbs.	lbs.
Laura VI. of Melrose	3658	5.4.15	12.4.15	273	14	7,172	5·80	416·36	250	474½
Jessie's Progress ..	3657	16.4.15	23.4.15	273	18½	7,784½	5·96	464·28	250	529½
Pearl III. of Melrose	Not yet allotted	20.4.15	27.4.15	273	9	4,016½	6·49	260·62	175	297
Lady Melrose IV. ..	,	27.4.15	4.5.15	273	18½	7,336	4·92	361·09	200	411½

SIXTH VICTORIAN EGG-LAYING COMPETITION, 1916-1917.

Commenced 15th April, 1916; concluding 14th April, 1917.

CONDUCTED AT THE BURNLEY SCHOOL OF HORTICULTURE BY THE DEPARTMENT OF AGRICULTURE, VICTORIA.

Six Birds. Pen No.	Owner.	Breeds.	15.4.16 to 14.5.16	Position in Competition.
	LIGHT BREEDS.			
	WET MASH.			
13	H. J. Meldows	White Leghorns	122	1
11	R. W. Pope	,,	121	2
17	W. G. Swift	,,	120	3
27	John Blacker	,,	116	4
38	V. Little	,,	115	5
40	A. Brandrett	,,	115	
16	F. Collings	,,	115	
15	G. Laughlan	,,	113	8
36	E. W. Hippe	,,	113	
1	G. *McDonnell*	,,	111	10
3	W. M. Bayles	,,	110	11
12	G. Hayman	,,	109	12
41	Excelsior Poultry Farm	,,	108	13
7	C. J. Jackson	,,	108	
34	F. G. Silbereisen	,,	105	15
26	Mrs. A. Dumas	,,	101	16
25	A. H. Mould	,,	104	
18	C. Ludwig	,,	103	18
37	J. M. Smith	,,	103	
5	W. G. Osburne	,,	101	20
6	J. J. West	,,	101	
23	T. A. Pettigrove	,,	95	22
20	H. Merrick	,,	93	
45	C. H. Oliver	,,	83	
28	S. Cheatle	R.C.B. Leghorns	83	24
22	Mrs. H. Stevenson	White Leghorns	83	
24	H. N. H. Miranis	,,	79	27
30	F. T. Denner	,,	79	
21	A. E. Payne	,,	74	29
44	J. Jamieson	,,	71	30
43	S. Buscumb	,,	70	31
2	H. McKenzie and Son	,,	69	32
42	Thirkell and Smith	,,	68	33
19	Benwerren Egg Farm	,,	65	34
14	W. B. Hunter	,,	65	
9	W. H. Clingin	,,	59	36
33	E. M. Evans	,,	54	37
8	E. A. Lawson	,,	52	38
29	A. S. Hyndman	,,	50	39
32	N. Burston	,,	44	40
10	J. H. Duncan	,,	44	
31	J. H. Gill	,,	22	42
101	A. E. Silbereisen	,,	15	43
39	L. Mclean	,,	12	44
4	Fulham Park	,,	5	45
35	Tom Fisher	,,	5	46
		Total	3,764	
	HEAVY BREEDS.			
	DRY MASH.			
97	D. Fisher	Black Orpingtons	95	1
98	Marville, P. F.	,,	78	2
95	Mrs. Pearce	,,	70	3
100	Oaklands Poultry Farm	,,	68	4
94	Mrs. Coad	,,	30	5
99	J. Ogden	,,	3	6
96	H. Hunt	,,	..	7
		Total	344	

SIXTH VICTORIAN EGG-LAYING COMPETITION, 1916-1917—*continued.*

Six Birds. Pen No.	Owner.	Breeds.	15.4.16 to 14.5.16.	Position in Competition.
		LIGHT BREEDS.		
		DRY MASH.		
46	W. H. Robbins ..	White Leghorns ..	140	1
59	T. A. Pettigrove ..	.. .. ..	134	2
52	W. J. Thom ..	.. .. ..	128	3
61	C. C. Dunn ..	.. .. ..	128	3
55	Rev. J. Mayo ..	.. .. ..	119	5
65	Izard and Tierney ..	.. .. ..	119	5
53	W. N. O'Mullane ..	.. .. ..	115	7
70	G. Wilkinson ..	.. .. ..	113	8
64	A. Bennet ..	.. .. ..	110	9
54	Mrs. Hughes ..	.. .. ..	108	10
58	C. Ludwig ..	.. .. ..	105	11
56	Mrs. Nicoll ..	.. .. ..	101	12
62	J. W. Morrow ..	.. .. ..	103	13
48	Thirkell and Smith ..	.. .. ..	95	14
69	E. A. Lawson ..	.. .. ..	91	15
47	H. McKenzie and Son ..	.. .. ..	83	16
49	C. Lane ..	.. .. ..	81	17
51	Reliable Poultry Farm ..	.. .. ..	80	18
60	A. Greenhalgh ..	.. .. ..	77	19
67	Lysbeth Poultry Farm ..	.. .. ..	60	20
50	Clevedon Poultry Farm ..	.. .. ..	57	21
57	H. J. Brown ..	.. .. ..	46	22
68	W. G. Osburne ..	.. .. ..	20	23
66	Benwerrien Egg Farm ..	.. .. ..	15	24
63	N. Burston ..	.. .. ..	..	25
		Total ..	2,231	
		HEAVY BREEDS.		
		WET MASH.		
72	Marville Poultry Farm ..	Black Orpingtons ..	141	1
74	Oaklands Poultry Farm ..	.. .. ..	140	2
89	Brooklyn Poultry Farm ..	.. .. ..	136	3
87	S. Buscumb	.. .. ..	119	4
86	C. Ludwig	.. .. ..	118	5
80	Mrs. Pearce	.. .. ..	104	6
85	Mrs. M. Coad	.. .. ..	91	7
79	Stranks Bros.	White Orpingtons ..	90	8
81	K. Courtenay	Faverolles ..	87	9
83	L. McLean	Black Orpingtons ..	69	10
92	J. H. Wright	.. .. ..	60	11
88	A. D. McLean	.. .. ..	60	11
77	Mrs. G. R. Bald ..	White Plymouth Rocks ..	56	13
93	L. W. Parker	Black Orpingtons ..	49	14
73	E. W. Hippe	Rhode Island Reds ..	40	15
90	Excelsior Poultry Farm ..	Black Orpingtons ..	40	15
91	N. Papayanni	.. .. ..	36	17
78	Reliable Poultry Farm ..	.. .. ..	33	18
75	Mrs. Drake	Rhode Island Reds ..	32	19
84	H. L. Trevana	.. .. ..	30	20
76	L. A. Erroy	Silver Wyandottes ..	18	21
82	J. Ogden	Black Orpingtons ..	2	22
71	C. E. Graham	.. .. ..	..	23
		Total ..	1,552	

Department of Agriculture,
Melbourne, Victoria.

A. HART,
Chief Poultry Expert.

MONTHLY REPORT.

The weather during the past month was mild and warm for time of year, consequently the new birds settled down and commenced laying better than usual. The yield of eggs for the month has been very satisfactory. A few birds have gone into partial moult, and others went off after arrival, whilst two birds have gone broody. Temperatures: highest, 82 deg. Fahr.; lowest, 45 deg. Fahr. Rainfall, 229 points.

A. HART,
Chief Poultry Expert.

Department of Agriculture,
Melbourne, Victoria.

ORCHARD AND GARDEN NOTES.

E. E. Pescott, F.L.S., Principal, School of Horticulture, Burnley.

The Orchard.

PLANTING.

The time has now arrived when the general planting of deciduous fruit trees will take place. The soil should have previously been well ploughed and subsoiled, and, as far as possible, drained. Certainly to insure satisfactory results, the orchard must be subsoiled. Where expense is a consideration, drainage may be left for subsequent years, but once the orchard has been planted, it will be impossible to subsoil.

When planting out, the distance between the trees will be determined by the kinds to be planted. For ordinary deciduous fruiting trees it is the custom in this State to plant them 20 feet apart in the rows, the rows also being 20 feet apart. Results have proved this to be a satisfactory practice. Almond trees may be planted 15 or 16 feet apart each way, while walnuts, owing to their spreading habit, require a distance of 30 feet apart each way.

Deep planting is not advocated, the general practice being that the depth of planting in the nursery should be followed. If holes are dug, they should be shallow, the bottom being merely loosened to allow a comfortable friable bed for the tree roots. A good practice is to dig the whole strip along which the trees are to be planted, merely removing sufficient soil afterwards when planting. Another satisfactory custom is to plough furrows 20 feet apart, and to plant the trees in the furrows, filling in the soil over the roots and trampling well down.

Before planting, the roots of the young trees should be well trimmed, shaped to an even form, and cleanly cut. As the result of their removal from the nursery beds, the roots are generally more or less damaged, and numbers of the fibrous roots, becoming dry, shrivel and die. These all require a clean trimming. Then it is often desirable to remove some of the roots so as to balance the root system. The trimming of the roots gives the young tree a clean root system, and it is enabled to establish itself with young, vigorous roots.

After planting, the top should be well cut back, so as to leave three or four arms, with three or four buds on each. Where it is not possible

to have this number of arms or limbs it is frequently advisable to cut back to one stem, allowing the buds to break out strongly and frame the tree after planting. In some localities, the custom of not cutting back the trees the first year is favoured. Local experience has not resulted in favour of this practice, as it is found to be inadvisable to unduly strain the young tree by leaving a heavy top to be supported by the weak-growing root system.

A number of good commercial fruits have been found to be either wholly or partially self-sterile, requiring other varieties near them to enable them to set their fruit. For this purpose it is necessary that the bloom periods should be somewhat coincident.

SPRAYING.

The dry season has been favorable, in many districts, to the increase of certain scale insects, woolly aphis, and the bryobia mite. The use of red oil has been advocated for these pests, and, as well, crude petroleum, kerosene and other oil emulsions have proved satisfactory. Some years ago the use of lime, sulphur and salt spray was much in vogue as a winter spray. Owing, however, to the difficulty of preparing the spray, and to its caustic effect on the skin, it was practically abandoned as an insecticide. Even then it was claimed, and rightly so, that the spray was, to a certain extent, a very good fungicide. The use of this mixture as a winter wash, with the omission of the salt, which has been found to be an unnecessary ingredient, is now general: and, as it is obtainable in a ready-made form, it is to be strongly recommended as a good all round winter spray.

GENERAL WORK.

All ploughing should now be completed; if not, it should be finished before spraying and pruning operations are proceeded with.

Any autumn manuring or liming should also be now carried out. This, too, should be finished before spraying or pruning. Before spraying with oils or with lime sulphur wash, all rough bark on apple and pear trees should be scraped off. This will mean the certain destruction of any codlin moth larvæ hiding underneath.

Vegetable Garden.

If not previously done, asparagus beds should be well cleaned out, and a top dressing of manure given. To insure good drainage, the soil from the paths, or between the beds, may be thrown up on the beds, so as to deepen the surface drainage, and to consequently warm the beds. This will mean earlier growths. A heavy dressing of manure should be given, and the beds well and roughly dug over.

Plant out seeds of tomatoes and the pumpkin family in the frames: and sow in the open, seeds of peas, lettuce, spinach, broad beans, radish, onions, carrot and leek. Asparagus crowns, rhubarb roots, tubers of Jerusalem artichokes, shallots and onions may now be planted out. Celery should still be earthed up, taking care not to have the beds too wet.

Flower Garden.

General cleaning up and digging will be the work for this month in flower section and shubbery. Where the soil is heavy or sour, or where

sorrel is plentiful, the garden should be given a heavy dressing of fresh lime, giving a fair dusting all over the surface. Lime should not be used in conjunction with leaves, garden *débris*, leaf-mould, stable manure, or any other organic matter used for humus. These should be first disposed of by digging well into the soil; then shortly afterwards a top dressing of lime may be given. Should no humic material be used, the lime may be dug in with the autumn digging.

In cleaning up gardens, all light litter and foliage should be either dug in, or, better still, it should be placed in an out-of-the-way corner to form a compost heap. Leaf-mould, well rotted, is especially useful in any garden, and where such plants as Azaleas, Rhododendrons, Liliums, &c., are grown, or for pot plant work it is exceedingly valuable. In forming the compost heap, no medium whatever should be added to help the rotting down of the leaves unless it be a little sand. Any chemical added will render the mould unsuitable for its special objects.

Any hardy annuals may be planted out, such as stocks, pansies, wall-flowers, &c., and cuttings of roses and hardwood shrubs may also be planted. In planting out cuttings it is very important that all the eyes should be removed from the part of the cutting which is to be below the ground. If this be not done, there will always be the subsequent danger of the plant suckering.

Roses and any summer and autumn flowering shrubs that have finished flowering may be pruned. If the spring flowering shrubs have not previously been pruned, they should be allowed to remain until after the next flowering season. This especially applies to such plants as Spireas, Philadelphus (Mock Orange), Deutzia, Prunus Mume, and other early flowering shrubs. To prune these now would mean the certain loss of a great proportion of their flowers.

In pruning, the shrubs may be well thinned out, especially removing any weak upright or old flowering growths; keep the shrub always at an outward growth, inclining to a broad bushy type, instead of to an upright habit. By this means, the lower regions will always be furnished with good growth. Shrubs and trees of all descriptions should never be allowed to become too crowded; they require to be opened, so as to allow sunlight and air into the interior, where it is most needed. This is one means by which this class of plants may be kept healthy and free from disease. Very few shrubs resent pruning, and the majority of them, including Australian shrubs, such as Acacias, are very amenable to the pruning knife.

In rose pruning, the rule is that strong growing plants require less severe cutting than the weak growing ones. As roses always flower on new wood, it is essential that to have good blooms the bushes must be pruned regularly. All weak growths, exhausted and worn out wood must be removed, retaining only vigorous growths. It is generally advisable to always prune to four or five eyes or buds, so as to have subsequent strong growths, always pruning into the previous season's wood. Spindly growths, especially in the centres of the bushes, should be removed, the plants being trained with an open and angular habit.

To prevent loss by decay, it will be advisable to lift and store such herbaceous plants as delphiniums, perennial phlox, rudbeckias, &c., also dahlias, tubers, chrysanthemums, cannas, and perennial sunflowers and asters. Failing the possibility of doing this, they should be lifted gently with a fork, so as to allow of a slight air space under the crown.

REMINDERS FOR JULY.

Live Stock.

HORSES.—Those stabled and worked regularly should be fed liberally. Those doing fast or heavy work should be clipped; if not wholly, then trace high. Those not rugged on coming into the stable at night should be wiped down and in half an-hour's time rugged or covered with bags until the coat is dry. Old horses and weaned foals should be given crushed oats. Grass-fed working horses should be given hay or straw, if there is no old grass, to counteract the purging effects of the young growth. Old and badly-conditioned horses should be given some boiled barley or linseed. Mares due to foal early if in poor condition should be fed liberally. Commence preparing stallion for season, especially if worked.

CATTLE.—Cows, if not housed, should be rugged. Rugs should be removed and aired in the daytime when the shade temperature reaches 60 degrees. Give a ration of hay or straw, whole or chaffed, to counteract the purging effects of the young grass. Cows about to calve, if over fat, should be put into a paddock in which the feed is not too abundant. Newly-calved cows should be fed liberally to stimulate milk flow. Calves should be kept in warm, dry shed.

PIGS.—Supply plenty of bedding in warm, well-ventilated styes. Keep styes clean and dry. Store pigs should be placed in fattening styes. Sows in fine weather should be given a grass run. Young pigs over two months old should be removed from lucerne run.

SHEEP.—Go carefully through all breeding flocks on conclusion of lambing. Reserve all best-framed and profitable-fleeced ewes. Ear mark all found undesirable to breed from, and dispose of any that may be fat before prices recede in the spring. Use a neat mark for ear-marking, not the "slash," "top off," and "quarter," the usual rough ear marks made by the knife. Discard all undersized, narrow-framed ewes, any with short yellow fleeces, those with thin locky staple, any with very fine, light, and wasty fleeces, ewes with "bottle" udders, single teats, undershot, overshot, or otherwise deformed mouths, ewes six years old and over. Draw teeth of aged ewes altogether, if showing open and signs of feed slipping through. Consider well before selling any early born, good-fleeced ewe lambs this coming season. Select best rams for future service; remember, wide, thick sheep are best thrivers, but they must carry good fleeces as well. Keep all ewes well crutched and the udders and eyes well cleared of wool previous to lambing. Give lambing flocks good attention. The early lambing over an extensive area has been again a partial failure, therefore every lamb saved will be well worth the trouble.

POULTRY.—Mating of birds intended for breeding purposes should receive immediate attention. Ten second-season Leghorns or Minorcas, or six of the heavier birds, such as Orpingtons, Plymouth Rocks, and Wyandottes (preferably in their second year), with a vigorous unrelated cockerel will be found satisfactory. Table birds bred in March or April will pay handsomely prior to the Cup Carnival. A tonic in drinking water as a preventive against chicken pox and other ailments is advantageous.

Cultivation.

FARM.—Finish sowing barley, peas and beans, and late white oats in backward districts. Trim hedges. Fallow for potatoes, maize, and other summer crops; in early districts, plant potatoes. Graze off early crops where possible.

ORCHARD.—Continue to plant deciduous fruit trees, bush fruits, and strawberries. Continue cultivating and pruning. Spray for mites, aphides, and scales.

FLOWER GARDEN.—Plant shrubs, climbers, and permanent plants, including roses; also annuals and herbaceous perennials, early Gladioli, Liliums, Iris, and similar plants. Continue digging, manuring, trenching, and liming.

VEGETABLE GARDEN.—Plant out seedlings. Sow seeds of carrots, parsnips, cauliflowers, onions, peas, broad beans, and tomatoes. Dig all vacant plots.

VINEYARD.—Proceed with pruning, burning off, and ploughing. Complete, as early as possible, the application of manures if not already done. Mark out land for new plantations. If ground is in good order and not too wet, proceed with plantation of young vines (unpruned). Remove cuttings or scions from vines previously marked, and keep fresh by burying horizontally in almost dry sand in cool, sheltered place. Permanently stake or trellis last year's plantations.

Cellars.—Rack all young wines, whether previously racked or not. Rack older wines also. For this work choose, as much as possible, fine weather and high barometer. Fill up regularly all unfortified wines. This is a good time for bottling wine.